HQ 52

TM 11-5815-205-14

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

TELETYPEWRITER CENTRAL OFFICE AN/MGC-17

(NSN 5815-00-926-0162)

This copy is a reprint which includes current pages from Changes 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

APRIL 1973

WARNING

HIGH VOLTAGE

is used in
this equipment

DEATH ON CONTACT

may result if safety precautions
are not observed.

DANGEROUS POTENTIALS

exist in the following units:

Ac power duct
Communication Security Equipment TSEC/KW–7
POWER DISTRIBUTION PANEL
SIGNAL & POWER ENTRANCE Box
Signal duct
Teletypewriter Reperforator-Transmitter TT–76(*)/GGC
Teletypewriter TT–4(*)/TG
Telegraph Terminal TH–5/TG
Telegraph-Telephone Signal Converter TA–182/U
Trailer Mounted Gasoline Engine Generator Set PU–322/G
Telegraph Terminal TH–22/TG

All operating adjustments of this equipment are made with the power applied. Be careful when working on the wiring side of the equipment.

DON'T TAKE CHANCES!

VENTILATION

When occupied, the shelter of Teletypewriter Central Office AN/MGC–17 must be ventilated at all times. Open the blower vents and the air filter cover. Operate both blowers for maximum ventilation. If only one blower is used, close the outside vent of the unused blower.

TECHNICAL MANUAL
No. 11-5815-205-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *16 April 1973*

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(NSN 5815-00-926-0162)

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*This manual supersedes TM 11-5815-205-15, 2 November 1959, including all changes.

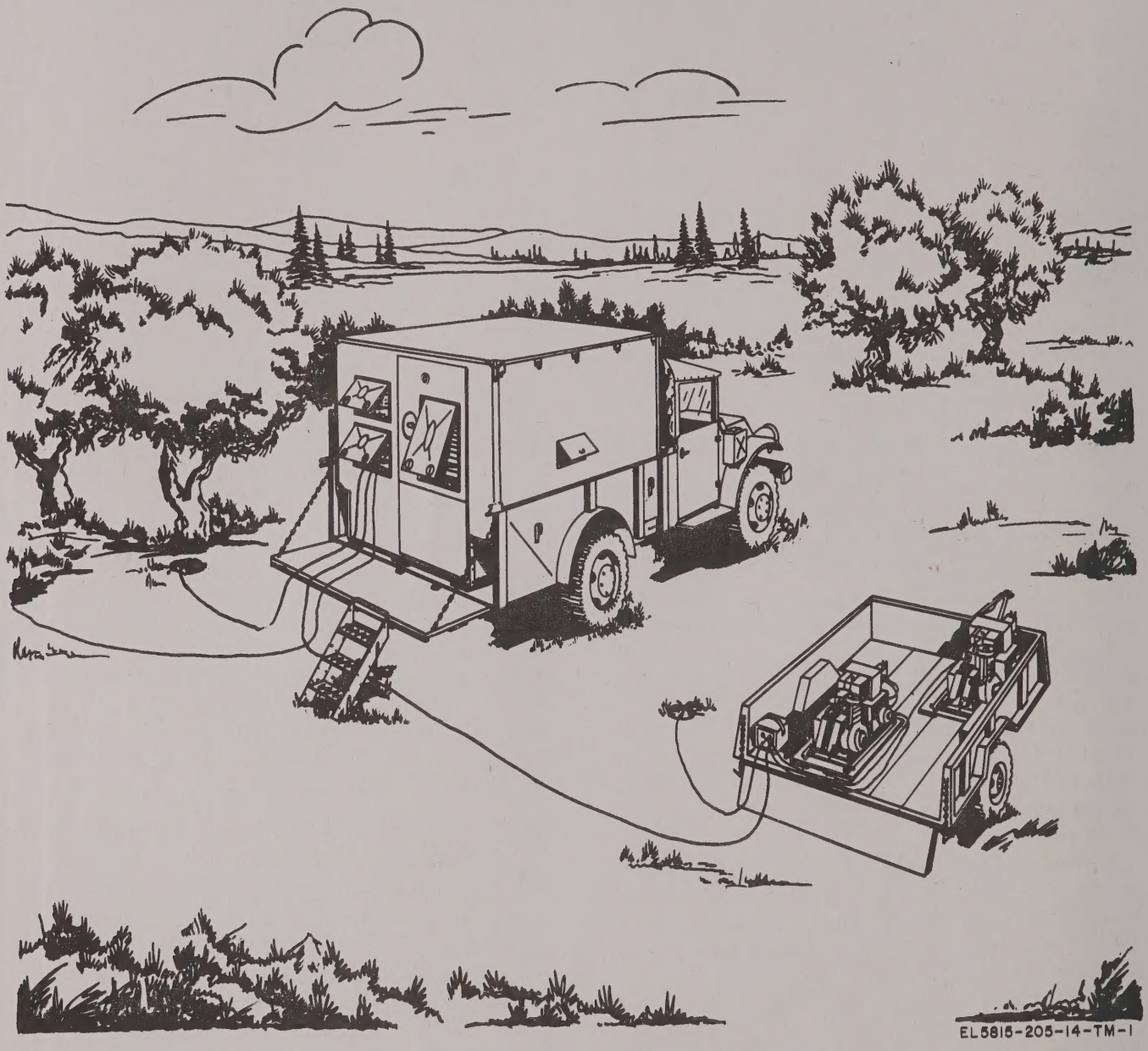


Figure 1-1. Teletypewriter Central Office AN/MGC-17, connected for operation.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual contains a description of Teletypewriter Central Office AN/MGC-17 (fig. 1-1) and instructions for its installation, operation, and maintenance. It includes instructions for operation under usual and unusual conditions and for cleaning and inspecting the equipment. Information on system and common items for Teletypewriter Central Office AN/MGC-17 is contained in TM 11-5805-204-15.

b. The term *organizational equipment* as used in this manual refers to equipment authorized the using organization and which is to be installed in Shelter, Electrical Equipment S-169/MGC-17. Shelter, Electrical Equipment S-169/MGC-17, with the organizational equipment installed, constitutes Teletypewriter Central Office AN/MGC-17.

c. Detailed information about the communication security equipment is not included in these instructions. Sufficient information is provided, however, to permit installation and operational testing of the communication security equipment.

d. Official nomenclature followed by (*) is used to indicate all models of the equipment covered in this manual. Thus, Teletypewriter TT-4(*)/TG represents Teletypewriter TT-4A/TG, TT-4B/TG, and TT-4C/TG. Teletypewriter Reperforator Transmitter TT-76(*)GGC represents Teletypewriter Reperforator-Transmitter TT-76A/GGC, TT-76B/GGC, and TT-76C/GGC.

e. Shelter, Electrical Equipment S-169C/MGC-17 is similar to Shelters, Electrical Equipment S-169/MGC-17, S-169A/MGC-17, and S-169B/MGC-17. Information in this manual applies to all shelters unless otherwise specified.

f. Terminal, Telegraph Set TH-22/TG is similar to Terminal, Telegraph Set TH-5/TG. Converter, Telegraph-Telephone Signal Set CV-245/U is similar to Converter, Telegraph-Telephone Signal Set TA-182/U. Information in this manual applies to both sets unless otherwise specified.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13/MRO P4030.29A, and DLAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

1-3.1. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703.

1-3.2. Reporting Equipment Improvement Recommendations (EIR)

EIR's will be prepared using DA Form 2407, Maintenance Request. Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

1-3.3. Administrative Storage

Refer to paragraph 6-1 for instructions on administrative storage of this equipment.

1-3.4. Destruction of Army Electronics Materiel

Destruction of Army materiel to prevent enemy use shall be as prescribed in TM 750-244-2.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

Teletypewriter Central Office AN/MGC-17 is an air- or vehicular-transportable voice-frequency (vf) telegraph switching center. It is used as a telegraph central office in a division area of an area type communications system. It contains facilities for three teletypewriter circuits (nonsecure, half- or full-duplex) or two secure, half-duplex teletypewriter circuits, when required, by the addition of communication security equipment. The AN/MGC-17 also provides 12 lines for switching telegraph transmission from other components in an area type communications system or from local subscribers. Two of the switchboard lines are equipped with vf ringers. Four additional vf ringers are provided for use as required. Trailer Mounted Gasoline Engine Generator Set PU-322/G, (two Power Units PE-75/AF) supplies the alternating-current (ac) power required to operate the AN/MGC-17.

1-5. Technical Characteristics

Technical characteristics of the organizational equipment are given in their respective technical manuals (app A). Overall technical characteristics for Teletypewriter Central Office AN/MGC-17 are given below.

Teletypewriter Circuits (nonsecure) ..... 3 (half- or full-duplex).
Teletypewriter switchboard circuits ..... 12 (manual switching).
Intershelter communication facilities ..... 1.
Security circuits:
Half-duplex ..... 2.
Power requirements:
Input to shelter ..... 115 volts ± 10%, 60 Hz single phase.
Power consumption:
Shelter lighting ..... 135 watts.
Telegraph Terminals TH-5/TG ..... 180 watts.
Telegraph-Telephone Signal Converters ..... 240 watts.
Teletypewriter Reperforator-Transmitters TT-76(*)/GGC ..... 300 watts.
Teletypewriters TT-4(*)/TG ..... 300 watts.
Security equipments ..... 170 watts.
Blowers ..... 248 watts.
Heater ..... 1,500 watts.
Total ..... 3073 watts.
Output from PE-75/AF (part of PU-322/G) ..... 2,500 watts.

NOTES

1. DO NOT OPERATE the heater when all organizational equipments are operating. The total power requirements, with all equipment operating, exceeds the maximum output of the power unit.

2. Total power consumed when using the TH-22/TG (20 watts) and the CV-425/U (25 watts) in pace of the TH-5/TG and the TA-182/U is 2698 watts.

Weight:
Shelter w/organizational equipment ..... 1400 lb.
Trailer mounted gasoline Engine Generator Set PU-322/G ..... 2300 lb.

1-6. Components

The charts in *a* through *d* below list the main components, organizational equipment, miscellaneous components, and running spares.

a. Main Components (Less Organizational Equipment).

Quantity	*Item*
1	Modified Electrical Equipment Shelter S-144/G complete with mountings and minor components (60½ in. high, 75½ in. long, 57¾ in. wide, 160 cubic ft volume).
1	Trailer Mounted Gasoline Engine Generator Set PU-322/G (83 in. high, 147 in. long, 73½ in. wide, 520 cubic ft volume).
2	Distribution Box J-1077/U.
1	Electrical Cord Assembly CX-4695/U (6 ft).
2	Electrical Power Cable Assembly (CX-4693/U (25 ft).
1	Electrical Power Cable Assembly CX-4694/U (100 ft).
1	Electrical Space Heater HD-375/U.
33	Patching cords:
4	Electrical Special Purpose Cable Assembly CX-4768/U (10 in.).
16	Electrical Special Purpose Cable Assembly CX-4768-U (1 ft 4 in.).
8	Electrical Special Purpose Cable Assembly CX-4768/U (2 ft 4 in.).
2	Electrical Special Purpose Cable Assembly CX-4768/U (4 ft).
1	Electrical Special Purpose Cable Assembly CX-4768/U (5 ft 6 in.).

Quantity	Item
	1 Electrical Special Purpose Cable Assembly CX-4766/U (4 ft 8¼ in.).*
	1 Electrical Special Purpose Cable Assembly CX-4767/U (4 ft 8¼ in.).*
2	Cable assembly, black plug, W-8.*
2	Cable assembly, red plug, W-9.*
1	Switch Box SA-331/U.
2	Telephone Cable Assembly CX-4566/G (250 ft).
1	Three combination, dial type, security safe.

* Used for connections when organizational equipment is installed.

b. Organizational Equipment.

Quantity	Item
2	Communication Security Equipment TSEC/KW-7.
1	Manual Telephone Switchboard SB-22/PT including two additional Line Jack Telephone Circuits TA-222/PT (less cover, Handset-Headset H-81/U, and Operator Telephone Circuit TA-221/PT).
3	Telegraph Terminal TH-5/TG or TH-22/TG.
6	Telegraph-Telephone Signal Converter TA-182/U or CV-425/U.
1	Telephone Set TA-312/PT (less carrying case).
2	Teletypewriter TT-4(*)/TG (less carrying case and immersion cover).
1	Teletypewriter Reperforator-Transmitter TT-76-(*)/GGC.
1	Teletypewriter Reperforator-Transmitter TT-76-(*)/GGC (less chad bin assembly).
1	Tool Equipment TE-49.
2	Tool Equipment TE-33.
2	Low Level Signaling Device TT-523A/GGC.

c. Miscellaneous Components (fig. 1-3).

Quantity	Item
1	Extension light.
1	Ground lead.
5	Power cable grip.
20	26-pair cable grip.
2	Shackles.
1 box	Thumbtacks.

d. Running Spares (fig. 1-4).

Quantity	Item
2	Fluorescent lamp, 20 watts, 115 volts, 24 inches.
1	Incandescent lamp (extension light), 50 watts, 115 volts.
1	Shelter neon lamp, 3-watt, 105-120 volts.
3	POWER DISTRIBUTION PANEL neon lamp, 1.4 watt, 105-120 volts.
3	Fluorescent starter.
1	Flashlight incandescent lamp.

1-7. Common Names

Components of Teletypewriter Central Office AN/MGC-17 to which common names have been assigned are listed below:

Component	Common name
Cable Reel RC-435/U	Cable reel
Connector Adapter UG-1312/U	Junction box
Distribution Box J-1077/U	Drop line box
Electrical Connector Plug U-185/G	26-pair connector
Electrical Connector Receptacle U-186/G	26-pair receptacle
Electrical Cord Assembly CX-4695/U (6 ft)	Telephone cord
Electrical Power Cable Assembly CX-4693/U (25 ft)	Power stub
Electrical Power Cable Assembly CX-4694/U (100 ft)	Power cable
Electrical Space Heater HD-375/U	Heater
Ground Rod MX-148/G	Ground rod
Manual Telephone Switchboard SB-22/PT:	Switchboard
Line Jack Telephone Circuit TA-222/PT	Line pack
Accessory Kit MX-230/PT	Accessory kit
Shelter, Electrical Equipment S-169/MGC-17	Shelter
Switch Box SA-331/U	Switchbox
Telegraph-Telephone Signal Converter TA-182/U or CV-425/U	Vf ringer
Telegraph-Line Control C-2894/TG	Line unit
Telephone Cable Assembly CX-4566/G (250 ft)	26-pair cable
Telephone Set TA-312/PT	Telephone set
Trailer Mounted Gasoline Engine Generator Set PU-322/G:	Generator set
Power Unit PE-75/AF	Power unit
¾-ton 2-wheel Cargo Trailer M101	Trailer

1-8. Description of Teletypewriter Central Office AN/MGC-17 (fig. 1-1)

The AN/MGC-17 is a self-contained, shelter-housed, teletypewriter central office with a power source. It is usually furnished to the using organization less the organizational equipment. The main components of the AN/MGC-17 are listed in paragraph 1-6 and figures 1-6 through 1-10. Components of the AN/MGC-17, which are the same as components of the other shelter-housed facilities used by division signal personnel in an area type communications system, are described in TM 11-5805-204-15.

1-9. Shelter, Electrical Equipment S-169/MGC-17 (fig. 1-5)

The lightweight shelter is adapted for both truck and helicopter transportation. It is fully insulated, watertight, and airtight. The left and right sides of the shelter are recessed to provide clearance for the wheel wells of the truck. Two exhaust blower vents with hinged covers are located on the outside front wall. Skids are bolted to the bottom of the shelter. Accessory D-rings

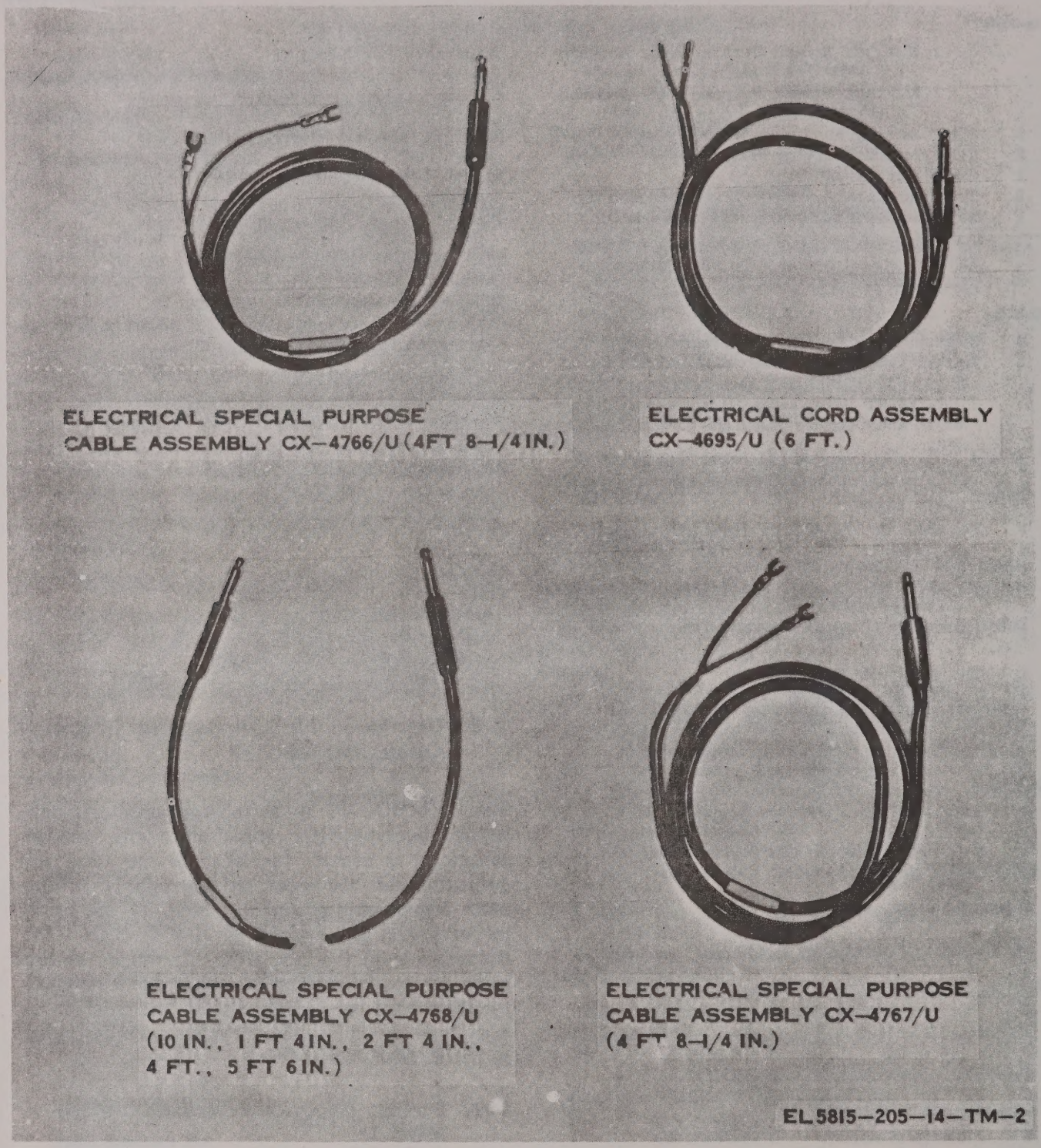

ELECTRICAL SPECIAL PURPOSE
CABLE ASSEMBLY CX-4766/U (4FT 8-1/4 IN.)
ELECTRICAL CORD ASSEMBLY
CX-4695/U (6 FT.)
ELECTRICAL SPECIAL PURPOSE
CABLE ASSEMBLY CX-4768/U
(10 IN., 1 FT 4 IN., 2 FT 4 IN.,
4 FT., 5 FT 6 IN.)
ELECTRICAL SPECIAL PURPOSE
CABLE ASSEMBLY CX-4767/U
(4 FT 8-1/4 IN.)
EL 5815-205-14-TM-2

Figure 1-2. Patching and installation cords and cables.

on the left and right sides can be used for tying equipment to the shelter. A two-section door at the rear of the shelter permits entrance when truck-mounted and the tailgate is up.

a. Left Wall (fig. 1-6). The teletypewriter equipment is mounted on equipment racks next to the left wall. The communication security equipment is mounted on two shelves. The NIGHT ALARM BATTERY box contains the batteries normally mounted in the rear of the SB-22/PT. A patching panel is provided for connecting organizational equipment. Two folding chairs (not shown) are stored in front of the TT-4(*)/TG during transit. A switchbox, used to transfer from one

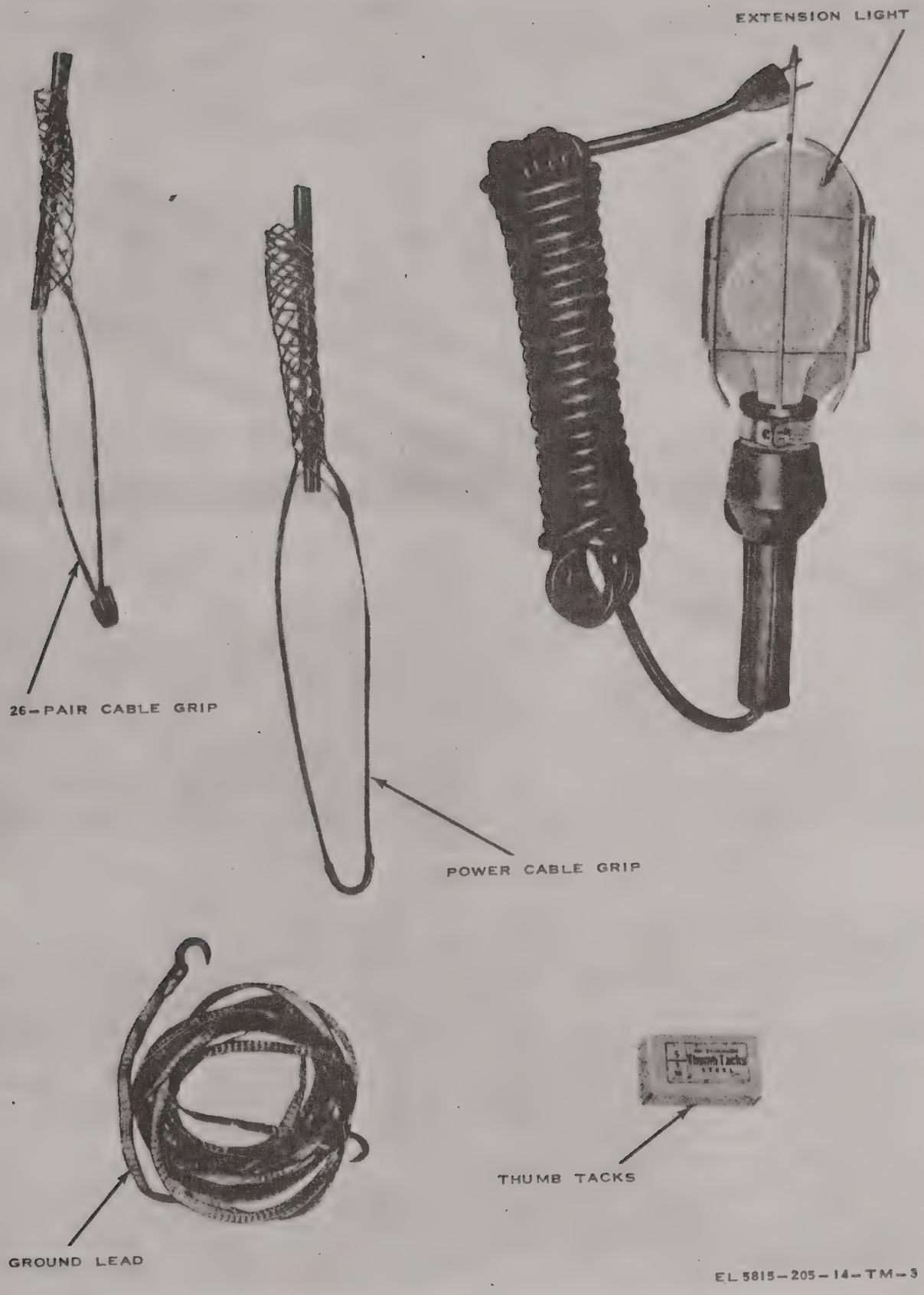


Figure 1-3. Miscellaneous shelter components.

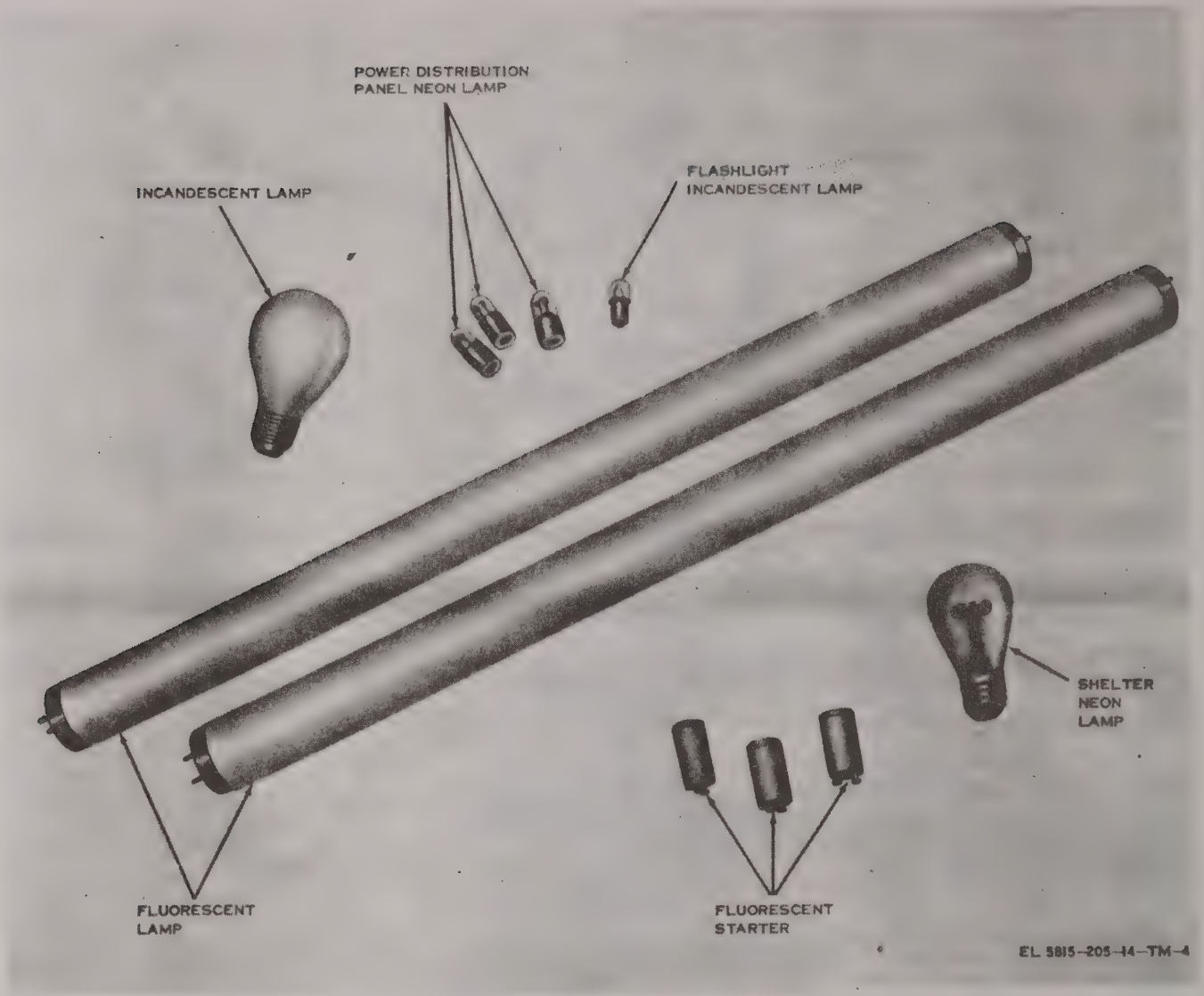


Figure 1-4. Running spares.

power source to another, is mounted next to the left wall. When not in use, the cable reel holders are stored above the switchbox on the left wall.

b. Right Wall (fig. 1-7). A tackboard is mounted on the right wall. A manual holder, fire extinguisher, and first aid kit are mounted on the tackboard. The message box in the wall permits the exchange of messages without opening the door of the shelter. A TA-312/PT is mounted on the tackboard. When not in use, the ground rod is stored in front of the tackboard. Six TA-182/U's or CV-425/U's and two dropline boxes are mounted on the right wall in the forward section of the shelter.

NOTE

In the S-169C/MGC-17 shelter, the two dropline boxes are secured with the ladder instead of to the right wall of the shelter during transit.

c. Front Wall (fig. 1-8). Two blowers are mounted on the front wall. The TA-182/U receptacles, indicating lamps, and switches are mounted in the ac power duct. The JACK & BINDING POST panel is for intershelter communication. The TH-5/TG switches and indicating lamps are mounted in the ac power duct.

d. Rear Wall (fig. 1-9). The SIGNAL & POWER ENTRANCE box and SIGNAL BINDING POSTS box are mounted in the rear wall. Two junction boxes, for the interconnection of power cables and power stubs, are stored on the door. The door is equipped with an air vent with an air filter. An observation window in the door enables the occupants of the shelter to identify

callers without opening the door. The switches that control the shelter lighting are in the ac power duct on the rear wall.

e. Floor (fig. 1–10). Storage mountings are provided on the floor for the switchbox, heater, and Tool Equipment TE–49. Recessed cable reel mountings are used to retain cable reels when the shelter is in transit. The ladder is attached to the reels by webbing straps. In the S–169C/MGC–17 shelter, the two dropline boxes are attached to the ladder by webbed straps.

f. Lighting. Four 20-watt fluorescent lamps provide the general lighting for the shelter. A neon lamp (fig. 1–9) is next to the door. The NEON, NORMAL-BLACKOUT, and FLUORESCENT switches are mounted near the door. With the NORMAL-BLACKOUT switch at BLACKOUT, the shelter lights (through the operation of the microswitch) will go out when the door is opened.

g. Power and Wiring. The external ac power source is connected to the shelter at the SIGNAL & POWER ENTRANCE box (fig. 1–12) and is distributed to the individual circuits through the POWER DISTRIBUTION PANEL (fig. 1–13). The teletypewriter and telephone circuits are connected to the shelter at the SIGNAL & POWER ENTRANCE box or the SIGNAL BINDING POSTS box (fig. 1–11) and are routed through the signal duct (fig. 1–6) to the patching panel (fig. 1–14) and to the switchboard. All the interior shelter wiring and cabling is contained in metal ducts which are equipped with removable covers. The ac power outlets in the shelter are all twist-lock receptacles which will accommodate "conventional" ac power plugs.

1–10. Trailer Mounted Gasoline Engine Generator Set PU–322/G
(fig. 1–1)

The generator set supplies the ac power necessary to operate the AN/MGC–17. The generator set consists of two Power Units PE–75/AF mounted in a ¾-ton, 2-wheel, Cargo Trailer

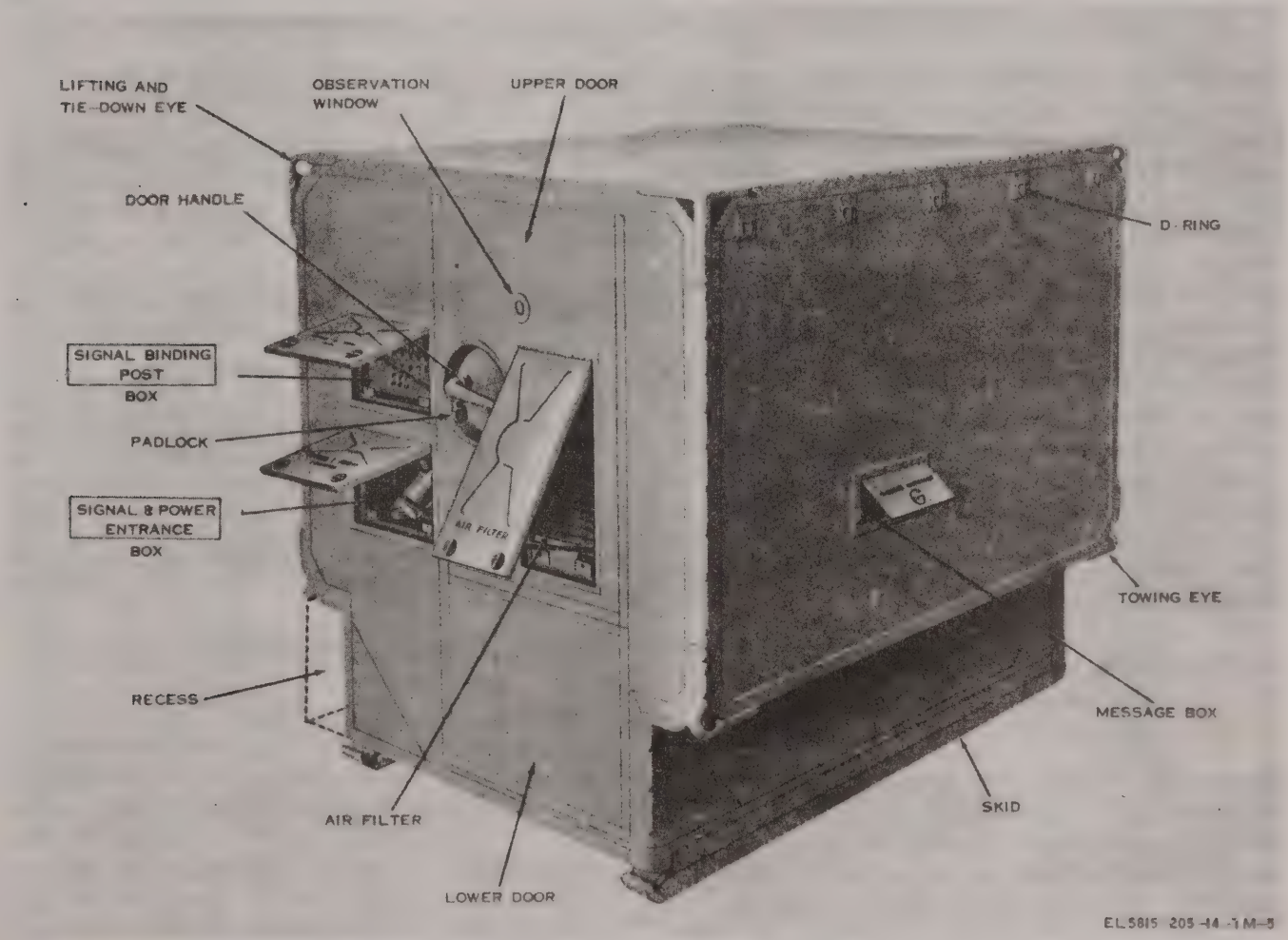


Figure 1–5. Shelter, Electrical Equipment S–169/MGC–17.

M101. Each power unit has an output of 2,500 watts, single-phase, 60-cycle per second, 120-volt alternating current. A complete description of the generator set is included in TM 11–5805–204–15.

1–11. SIGNAL BINDING POST Box
(fig. 1–11)

The SIGNAL BINDING POSTS box contains 21 pairs of binding posts which connect to the switchboard, vf ringers, patching panel, and JACK & BINDING POST panel. Except for pairs A and B, the binding posts are in parallel with the contacts of the 26-pair receptacle. The connections are listed in the chart below:

SIGNAL BINDING POSTS box pair No.	*SIGNAL & POWER ENTRANCE box SIGNAL 1 receptacle pair No.*
1 through 10	1 through 10
11	11
12	12
13 through 18	13 through 18
	19 through 25 (spare)
LB PHONE	26
BINDING POSTS A	No connection
BINDING POSTS B	No connection

Equipment connection	
Equipment	*Binding post*
Switchboard	LINE 1 through 10
TA–182/U 5	LINE 4 WS 2W
TA–182/U 6	LINE 4 WS 2W
Patching panel	LINE 13 through 18
JACK & BINDING POST PANEL.	LB PHONE
JACK & BINDING POST PANEL.	A
JACK & BINDING POST PANEL.	B

1–12. SIGNAL & POWER ENTRANCE Box
(fig. 1–12)

The SIGNAL & POWER ENTRANCE box contains a 26-pair cable receptacle (SIGNAL 1), two 115-volt ac power receptacles (POWER IN and POWER OUT), a convenience receptacle (115 VAC), ground lug, and a door-buzzer pushbutton. The SIGNAL 1 receptacle provides connections for circuits between the AN/MGC–17 and the SB–611/MRC. The incoming power to the shelter from the switchbox mounted in the generator set is connected to the POWER IN receptacle. The POWER OUT receptacle can be used to supply power to a second shelter if the output (2,500 watts) of the generator set is not exceeded. A ground lug with a wingnut provides facilities for connecting a ground to the shelter and the equipment. The pushbutton operates the door buzzer to provide an audible signal when the shelter door is locked.

1–13. Distribution Boxes J–1077/U and J–1077A/U
(fig. 1–7)

When not in use, two dropline boxes in the S–169/MGC–17, S–169A/MGC–17, and S–169B/MGC–17 shelters are mounted on the right wall. In the S–169C/MGC–17, two dropline boxes are secured with the ladder during transit. The dropline boxes are used for testing, as wireheads, and to drop extension circuits from a 26-pair cable. A complete description is included in TM 11–5805–204–15.

1–14. POWER DISTRIBUTION PANEL
(fig. 1–9 and 1–13)

The POWER DISTRIBUTION PANEL is mounted on the rear wall directly above the SIGNAL BINDING POSTS box. It is used to control and distribute the ac power supplied to the shelter. Mounted in the panel is an ac ammeter with a full-scale deflection of 50 amperes, a current transformer (not shown), a voltmeter with a 0–150 volts scale, a MAIN circuit breaker rated at 50 amperes, and individual 15-ampere circuit breakers with indicating lamps. The individual circuit breakers control the LIGHTS, OPR POS, BLOWER 1, BLOWER 2, CONVENIENCE RECEPTACLE, and HEATER. A 12.3-ampere OVERLOAD circuit breaker protects the power unit.

1–15. Telegraph Line Control C–2894/TG
(fig. 1–6)

The three line units are used to change the circuits of the TH–5TG's from two-wire operation to four-wire half-duplex (with home copy), to four-wire duplex (without home copy). A line unit is installed on the front panel of each TH–5/TG. A complete description of the line unit is included in TM 11–5805–204–15. Line unit C–2894/TG is used on the TH–5/TG only, and not used on the TH–22/TG.

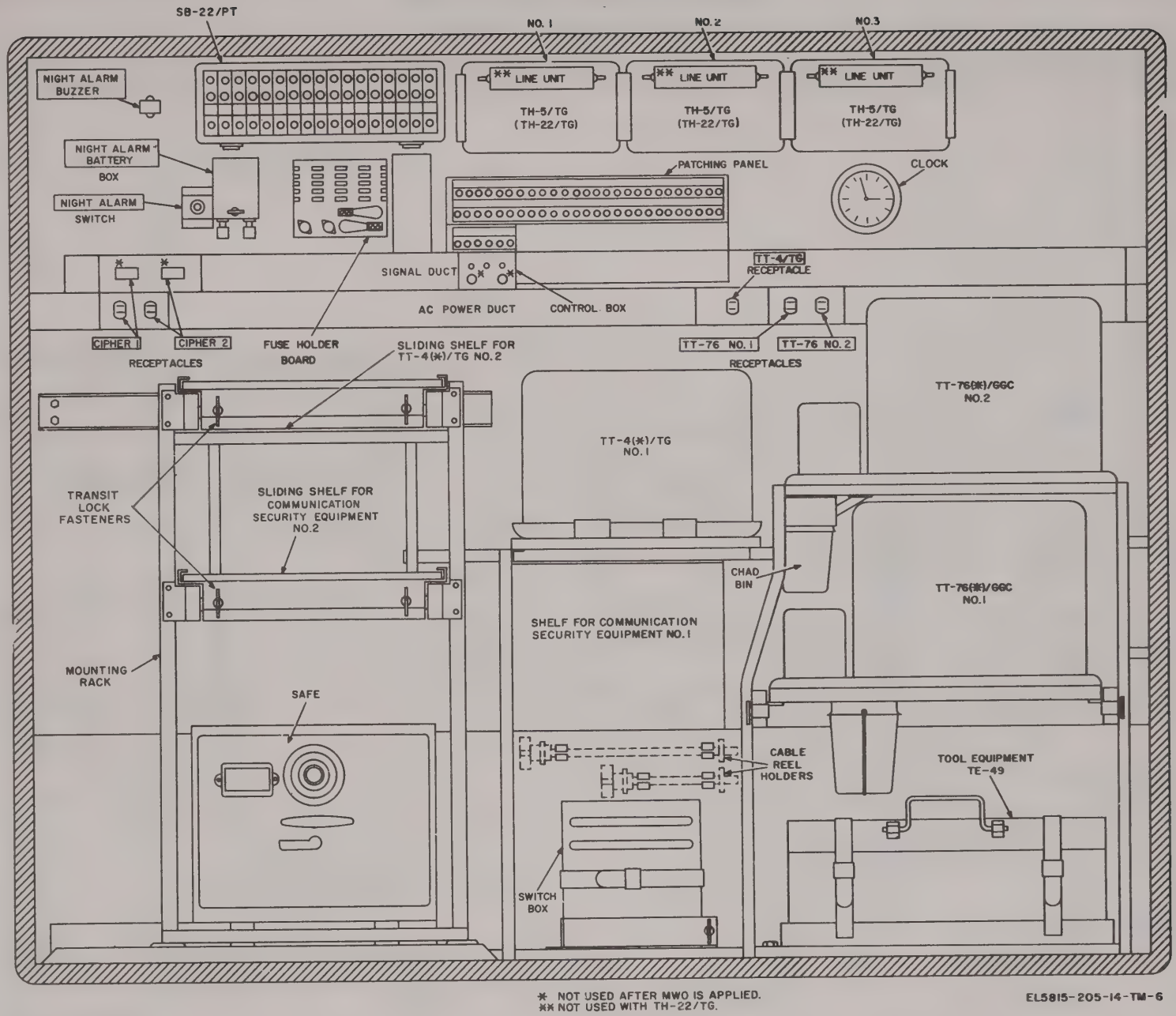


Figure 1–6. Shelter, left wall, interior view.

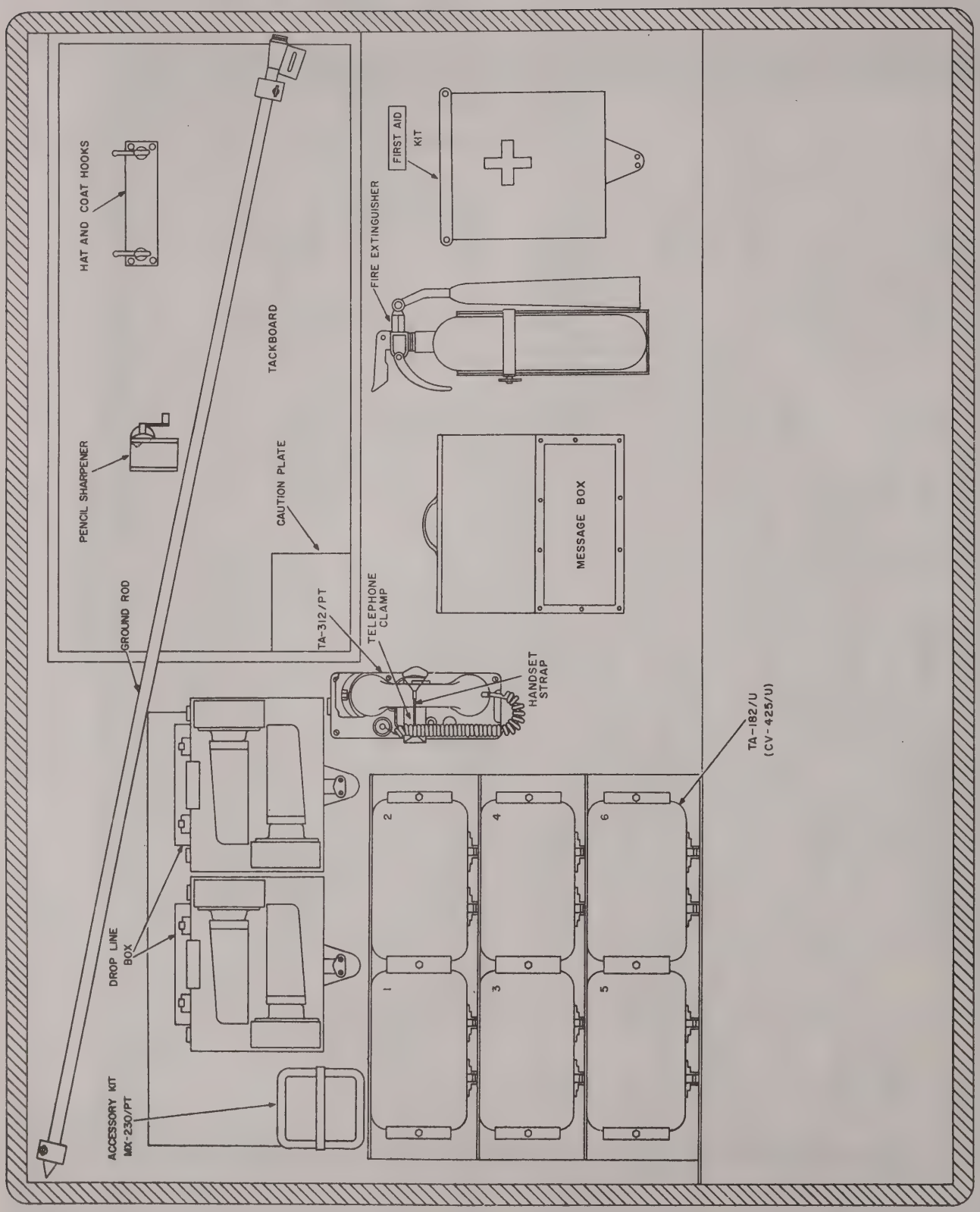


Figure 1-7. Shelter, right wall, interior view.

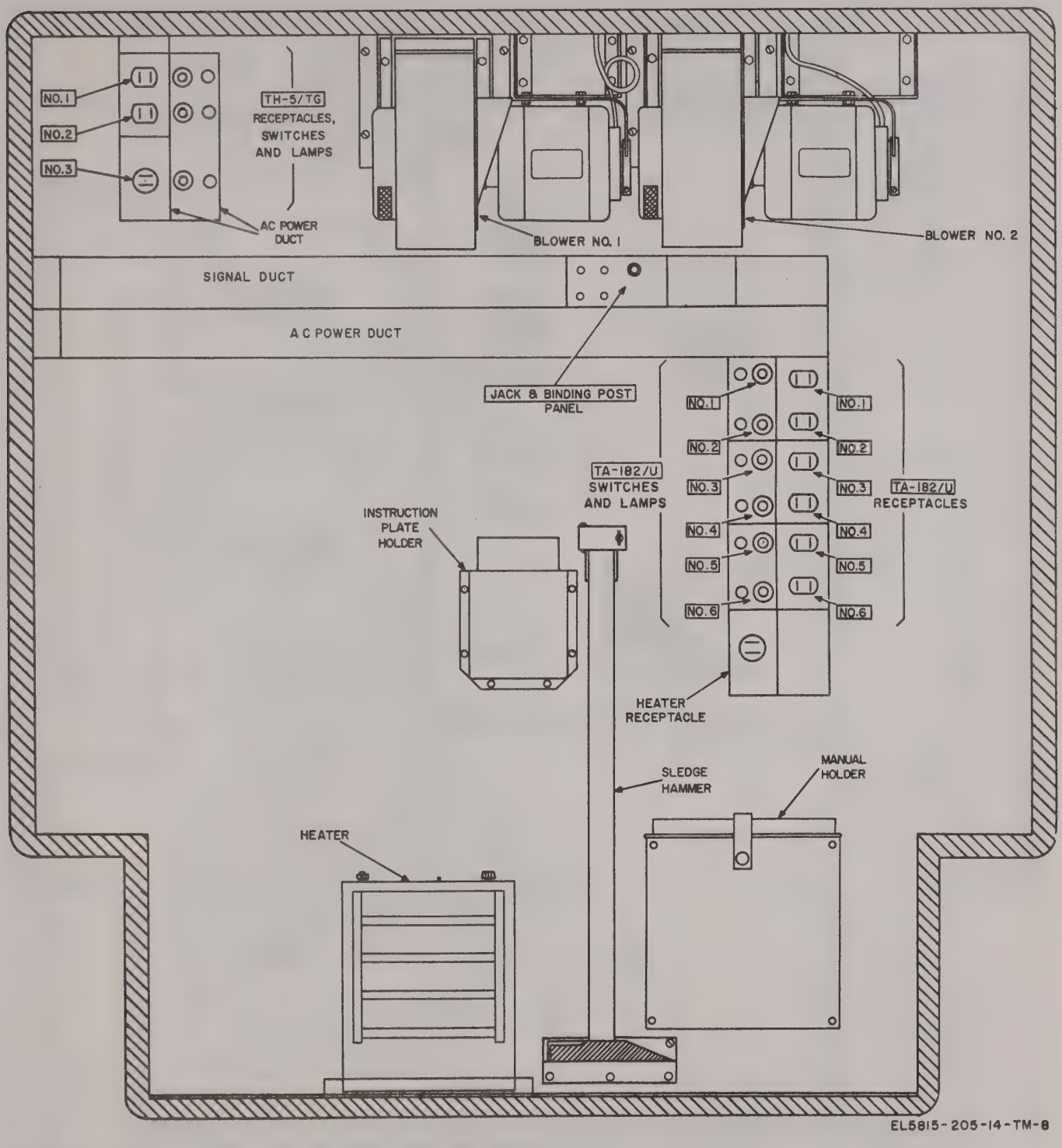


Figure 1-8. Shelter, front wall, interior view.

1-16. Patching Panel
(fig. 1-14)

The patching panel, containing three rows of jacks, is mounted directly below the three telegraph terminals (TH-5/TG or TH-22/TG) on the left wall of the shelter. The bottom row of jacks is recessed, and is used to connect the telegraph terminals, TT-76(*)/GGC, and TT-4 (*)/TG No. 1 into the system. The connected cords and plugs are protected by a hinged cover. The two upper rows of jacks are used for patching interconnections between the converters

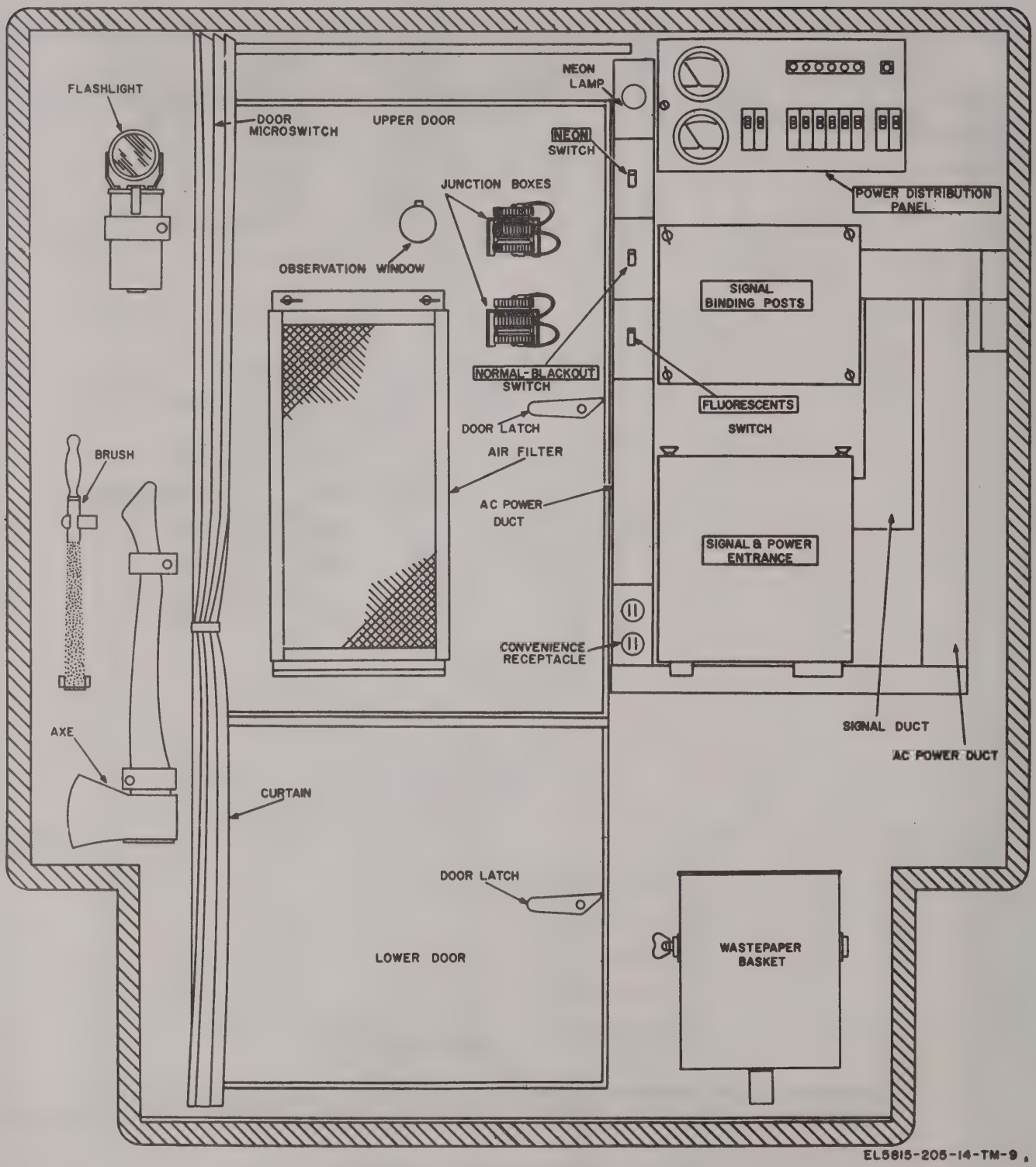


Figure 1-9. Shelter, rear wall, interior view.

(CV-425/U or TA-182/U) and TT-76(*)/GGC, TT-4(*)/TG No. 1 (TH-5/TG or TH-22/TG), and SB-22/PT.

NOTE

For secure operation, connect TTY equipment directly to the COMSEC equipment as shown in figure 2-2.

1-17. Electrical Space Heater

(fig. 1-8 and 1-10)

The heater is mounted on the floor near the

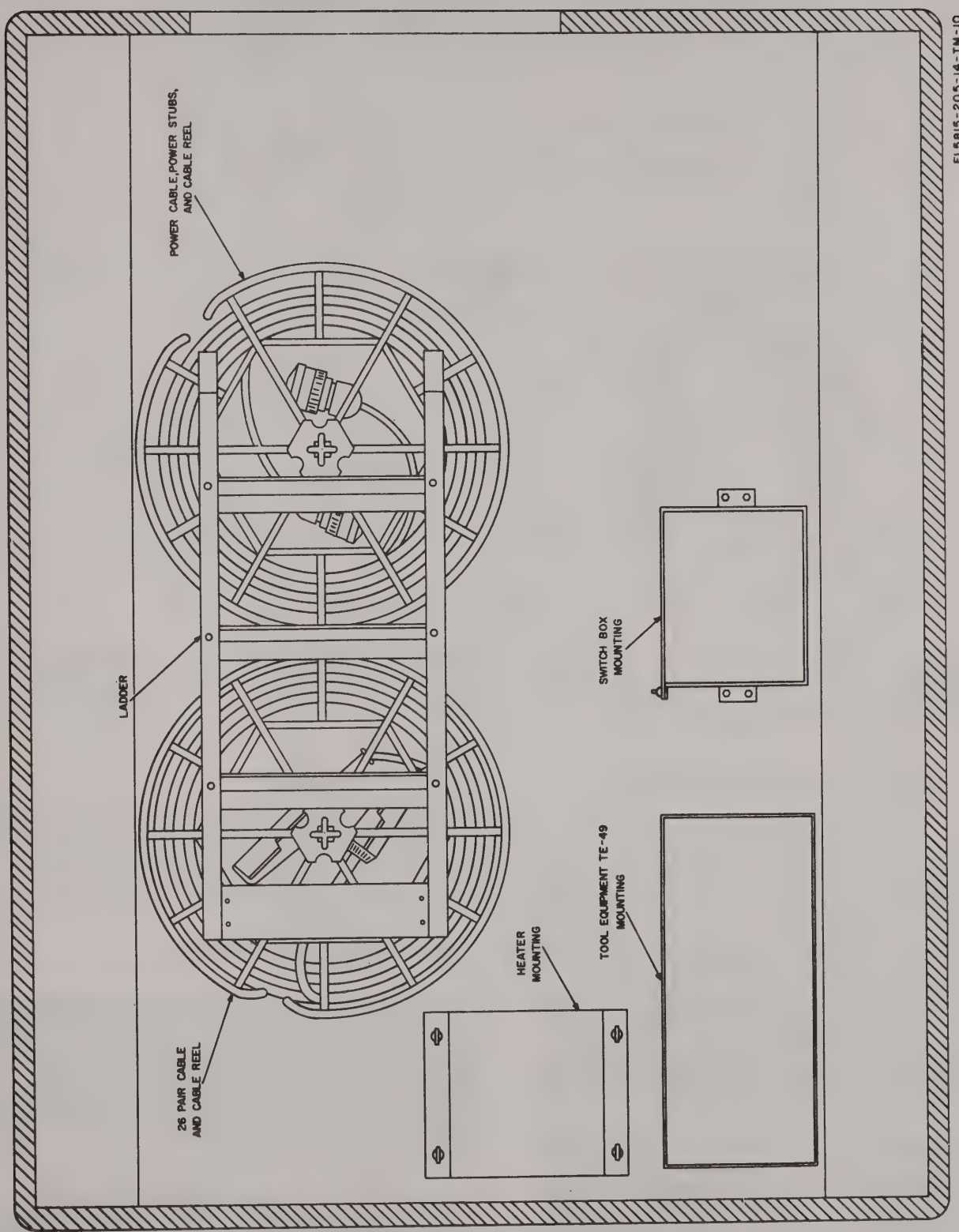


Figure 1-10. Shelter, floor plan, interior view.

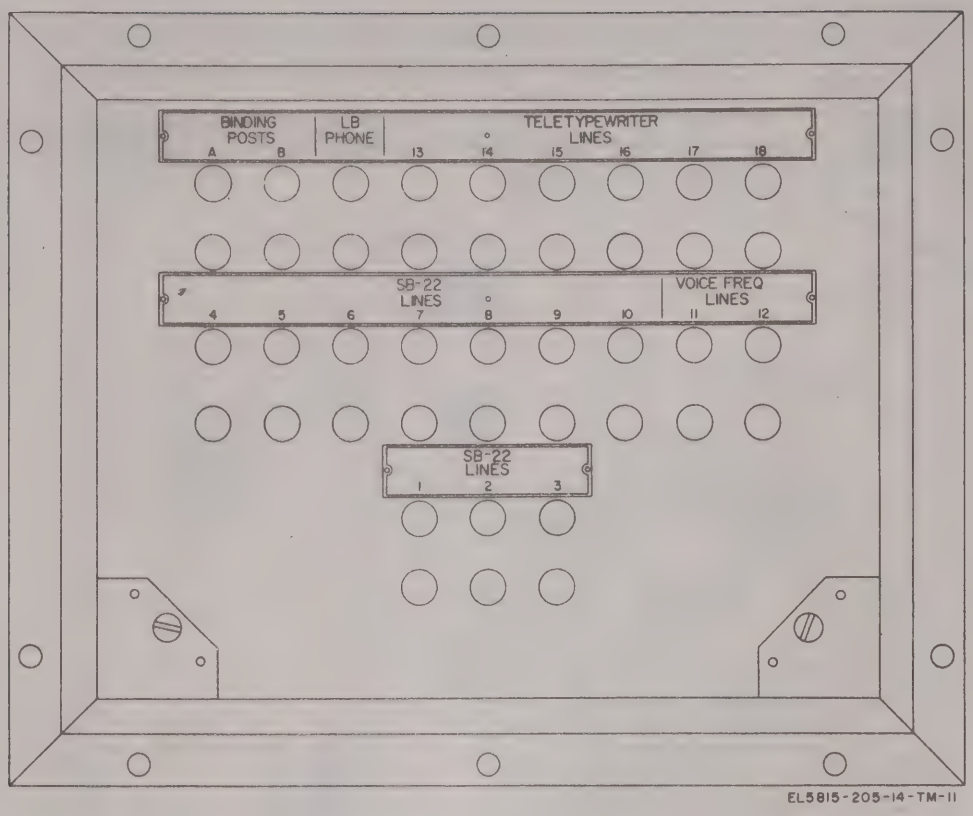


Figure 1-11. SIGNAL BINDING POSTS box.

front wall. A switch permits the heating element and fan to be operated together or the fan to operate alone. A complete description of the heater is included in TM 11-5805-204-15.

1-18. JACK & BINDING POST panel

(fig. 1-8)

The JACK & BINDING POST panel is mounted in the signal duct on the front wall. Two pairs of binding posts (A and B) and a jack (LB PHONE) are mounted on the panel. The binding posts are connected to the A and B binding posts in the SIGNAL BINDING POSTS box. The LB PHONE jack is connected in parallel with the LB PHONE pair of binding posts in the SIGNAL BINDING POSTS box and with pair 26 of the SIGNAL 1 receptacle in the SIGNAL & POWER ENTRANCE box.

1-19. Control Box

The control box contains the three neon lamps removed from the TH-5/TG's and two pushbutton switches. The neon lamps, extensions from the send lamp sockets of each TH-5/TG, indicate when a TH-5/TG is in the send condition. The pushbutton switches are not used for KW-7 operation. The control box is mounted on the left wall in sight and within easy reach of the operator.

1-20. Safe

(fig. 1-6)

The safe is mounted under the communication security equipment mounting shelf. It is used to store classified material and has a three-combination lock and a thumb latch.

1-21. Cords and Cables

(fig. 1-2)

a. Electrical Special Purpose Cable Assembly CX-4768/U. This cable assembly is a flexible, two-conductor cord used to patch teletypewriter circuits, equipped with a black telephone plug at each end. It is provided in the AN/MGC-17 in lengths of 10 inch, 1 foot 4 inches, 2 feet 4 inches, 4 feet, and 5 feet 6 inches.

b. Electrical Cord Assembly CX-4695/U (6 ft). This cord assembly is a flexible, two-conductor cord used to connect the telephone set to the JACK & BINDING POST panel. It is equipped with a black telephone plug at one end and prepared leads at the other end.

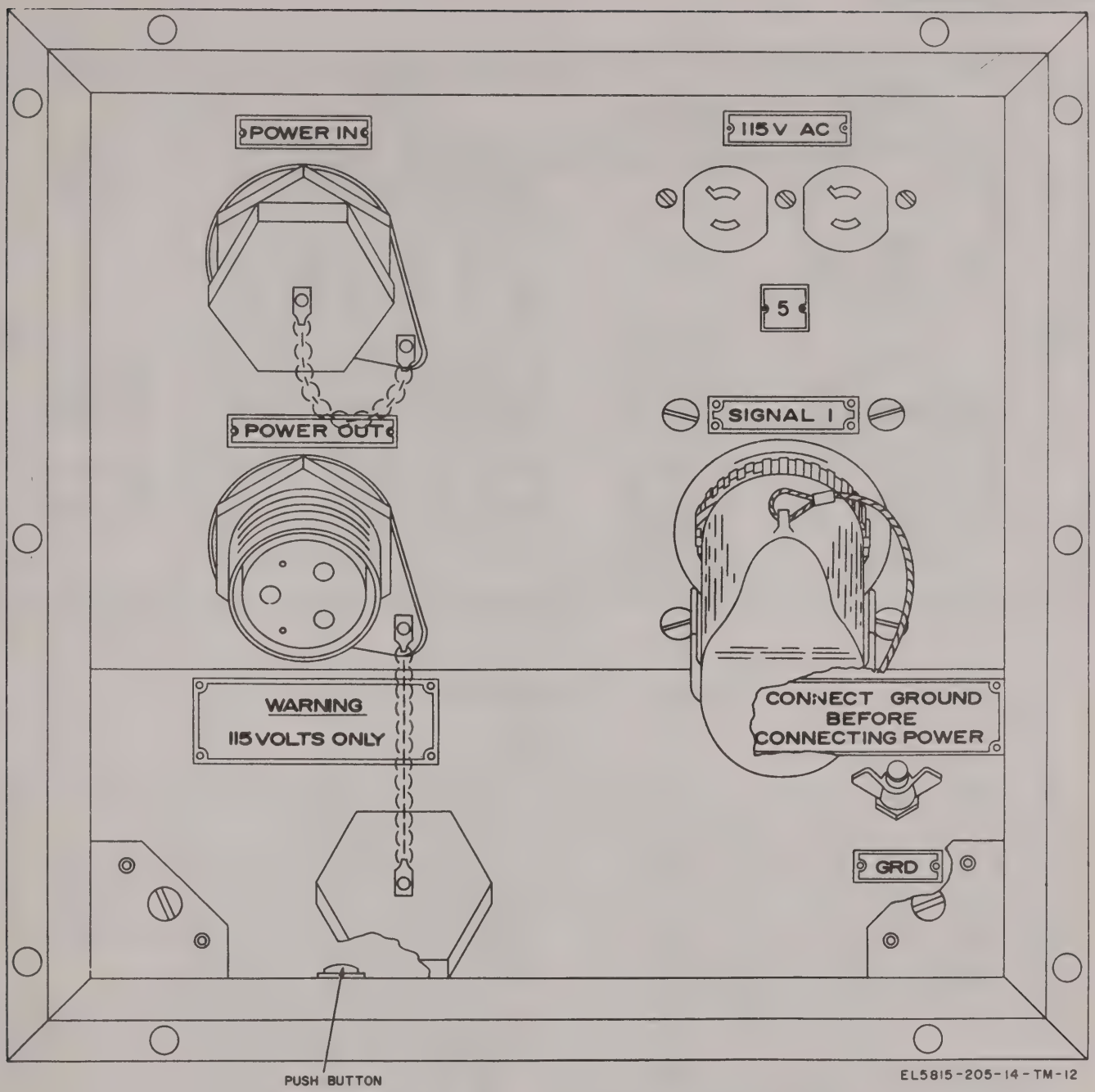


Figure 1–12. SIGNAL & POWER ENTRANCE box.

c. Electrical Special Purpose Cable Assembly CX–4766/U (4 ft 8 ¼ in.). This cable assembly is a flexible two-conductor cord equipped at one end with a black telephone plug and at the other end with spade terminals. It connects the No. 1 TT–4(*)/TG to the TT–4 BLACK jack in the patching panel.

d. Electrical Special Purpose Cable Assembly CX–4767/U (4 ft 8 ¼ in.). This cable assembly is the same as the CX–4766/U (*c* above) except it has a red telephone plug and connects to the TT–4 RED jack in the patching panel.

1–22. Organizational Equipment

a. Manual Telephone Switchboard SB–22/PT. The switchboard is mounted on the left wall (fig. 1–6) and is used to switch voice-frequency teletypewriter circuits. The operator's pack is removed and five additional line packs are added, four of which are spares. Line pack 17 is connected to the SB–22 OPR TH–5 on the patching panel and is used as the operator's pack for answering switchboard calls. The switchboard provides 12 teletypewriter lines; two of the lines are equipped with vf ringers.

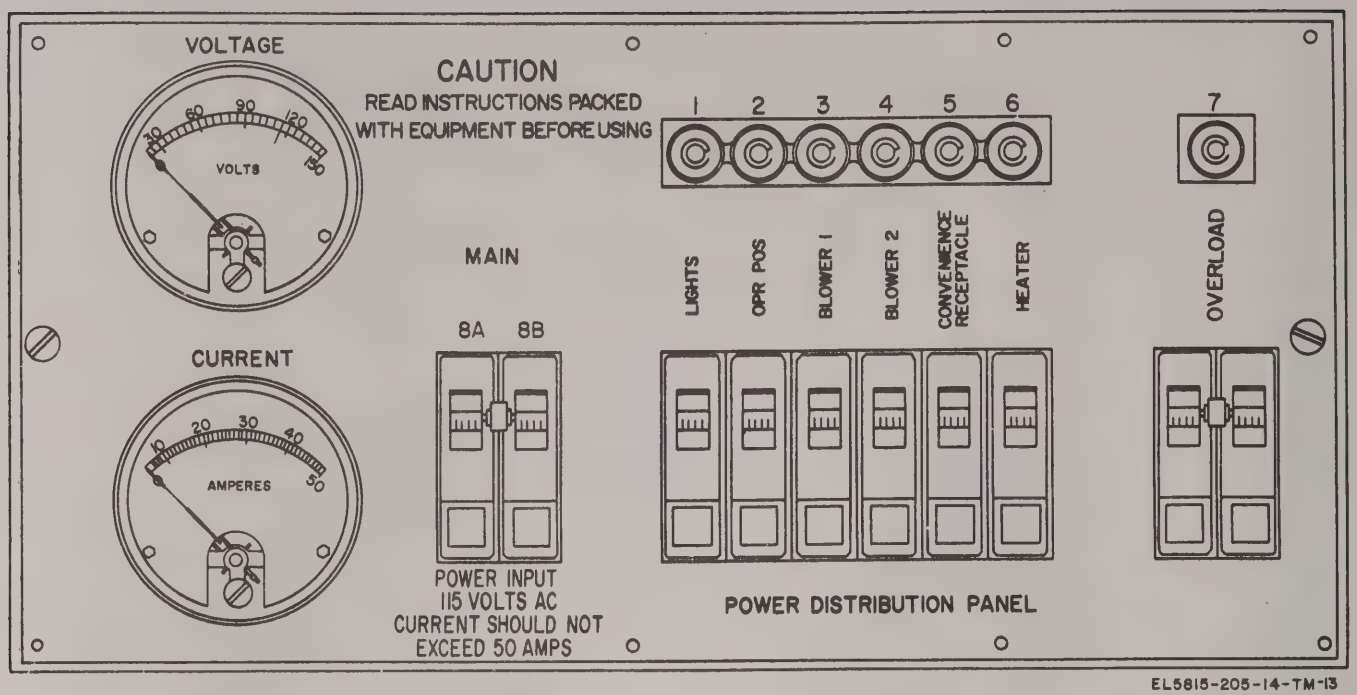


Figure 1-13. POWER DISTRIBUTION PANEL.

b. Teletypewriter Reperforator-Transmitter TT-76(*)/GGC. The two TT-76(*)/GGC's are mounted on shelves, one above the other, on the left wall (fig. 1-6). They provide facilities for manual transmission directly from a keyboard, and for tape transmission from a transmitter-distributor. Both teletypewriters must be modified for secure operation (para 2-5). Received messages are printed and perforated on 7/8-inch paper tape.

c. Teletypewriter TT-4(*)/TG. TT-4(*)/TG No. 1 is mounted to the left of the TT-76(*)/GGC's (fig. 1-6). TT-4(*)/TG No. 2 is mounted on a sliding shelf to the upper left of TT-4(*)/TG No. 1, and is used during secure operation only.

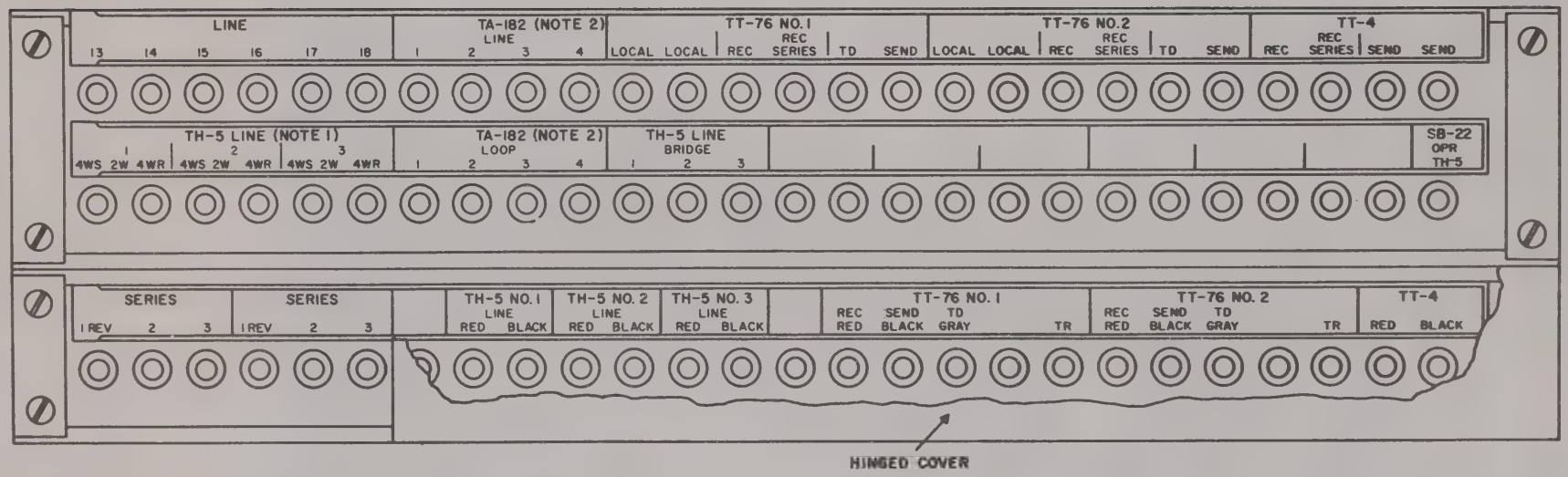
d. Telegraph Terminal TH-5/TG (or TH-22/TG). Three units are mounted in a rack above the TT-4(*)/TG No. 1. They are used for voice-frequency teletypewriter operation. The unit is a frequency-shift (fs) carrier modulator and demodulator. It modulates and demodulates 20-milliampere (ma) direct-current (dc) teletypewriter pulses to 1,325 Hz (mark) and 1,225 Hz (space). It also provides for transmitting and receiving a 20-Hz frequency for signaling and breaking purposes.

e. Telegraph-Telephone Signal Converter TA-182/U (or CV-425/U). Six converters are mounted in a rack on the right wall (fig. 1-7). They provide for signaling in circuits which will not pass 20-Hz ringing signals.

f. Communication Security Equipment TSEC/KW-7 (KAM-143/TSEC and KAO-83/TSEC). Provisions are made for mounting two TSEC/KW-7's in a rack located below the switchboard (fig. 1-6). A complete description of the TSEC/KW-7 is included in KAM-143/TSEC. Operating instructions are included in KAO-83/TSEC.

g. Telephone Set TA-312/PT. The telephone set (less carrying case) is mounted on the right wall (fig. 1-7). It is arranged for local battery manual telephone operation and is used for unclassified communication between shelters.

h. Tool Equipments (fig. 1-6). Tool Equipment TE-33 may be stored in any convenient location. Tool Equipment TE-49 is stored on the floor near the left and front walls. The tool equipments are used for installation and maintenance of the AN/MGC-17.



NOTES:

1. TH-5 LINE JACKS 4WS-2W AND 4WR ARE DESIGNATED TH-22 LINE. 4WS AND 4WR-2W RESPECTIVELY WHEN FACILITY IS EQUIPPED WITH TH-22/T6'S.
2. TA-182 LINE AND LOOP JACKS ARE DESIGNATED CV-425 LINE AND LOOP JACKS WHEN FACILITY IS EQUIPPED WITH CV-425/U'S.

EL5815-205-14-TM-14

Figure 1-14. Patching panel.

1-23. Equipment Differences Between TH-5/TG and TH-22/TG, and Between TA-182/U and CV-425/U

(fig. 1-16, 1-17)

a. Terminal, Telegraph TH-22/TG differs from Terminal, Telegraph TH-5/TG in the following details.

(1) The TH-22/TG utilizes transistorized circuitry as opposed to tube circuitry in the TH-5/TG.

(2) In addition to the front panel controls, indicators and fuses on the TH-5/TG, the TH-22/TG incorporates the following:

(*a*) A BOOST toggle switch which, when positioned upward, amplifies the break-in signal.

(*b*) A THRESHOLD indicator lamp which indicates a low signal or no signal present at the 4WS/TEL or 2W/R terminals.

(*c*) A BREAK-IN switch, which initiates a break-in function during telegraphic communications over a two-wire line facility.

(*d*) A RESET switch, which disables the alarm circuit and restores the teletypewriter circuit for operation.

(*e*) A three-position screwdriver power switch, which permits either 115-volt ac, 230-volt ac, or 26-volt dc operation (115-vac option used in AN/MGC-17).

(*f*) A power ON-OFF switch.

(*g*) A power indicator lamp.

(*h*) A MODE ONE-MODE TWO switch which, when positioned to MODE ONE, produces in output rate of 60, 75, or 100 words per minute. When positioned to MODE TWO, an output rate of 200 words per minute is produced (MODE TWO not used in AN/MGC-17).

(*i*) An EXT BAT receptacle for connecting a teletypewriter which provides loop current (not used in AN/MGC-17).

(*j*) A REC receptacle for connecting a teletypewriter which does not provide loop current.

(*k*) A VF-20 switch. In VF position, it produces an output signal frequency of 1232.5 Hz; in 20 position it produces a 20-Hz signal frequency.

(*l*) 115/230 vac (1/4A) and 26VDG (2A) fuseholders.

(*m*) No perforated heat dissipation area on the front panels.

b. Converter, Telegraph-Telephone CV-425/U differs from Converter, Telegraph-Telephone TA-182/U in the following details.

(1) The CV-425/U utilizes transistorized circuitry as opposed to tube circuitry in the TA-182/U.

(2) A POWER ON-OFF toggle switch is on the front panel.

(3) 230-volt ac, as well as 115-volt ac, is used as an operating voltage (115-vac option used in AN/MGC-17).

(4) A 1/2-ampere fuse instead of a 1-ampere fuse is used.

(5) There is no perforated heat dissipation on the front panel.

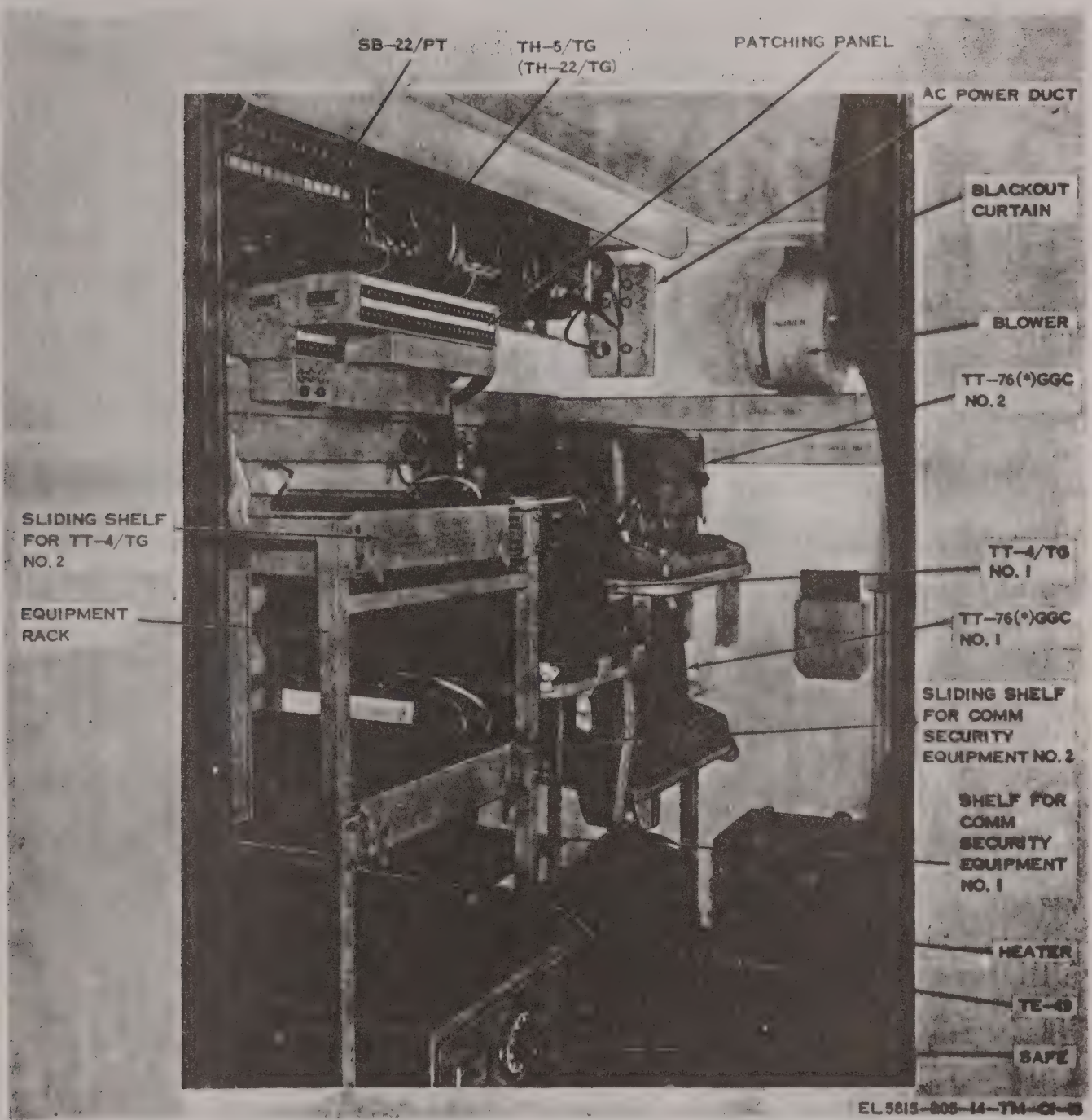


Figure 1-15. Shelter, left side, interior view.

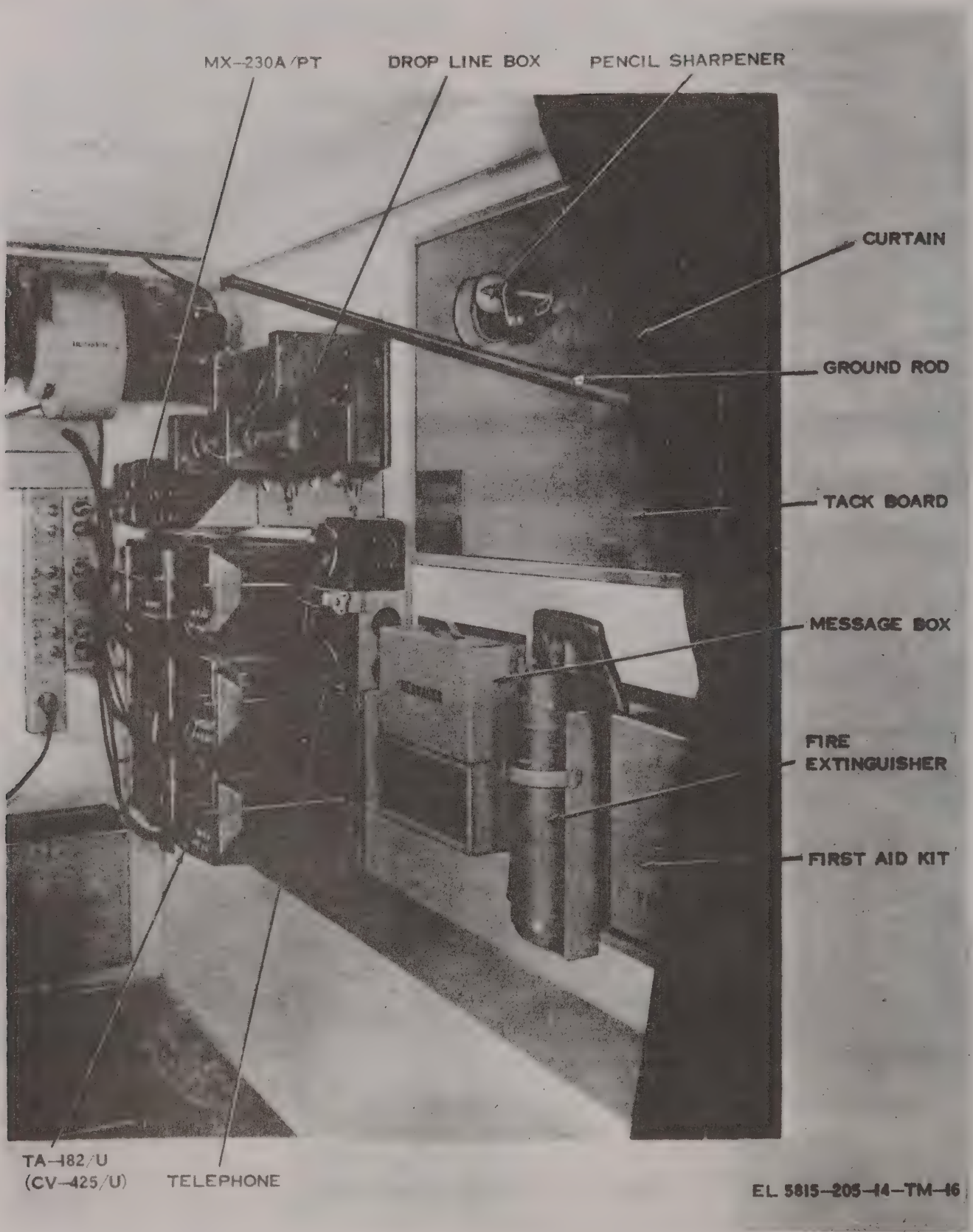
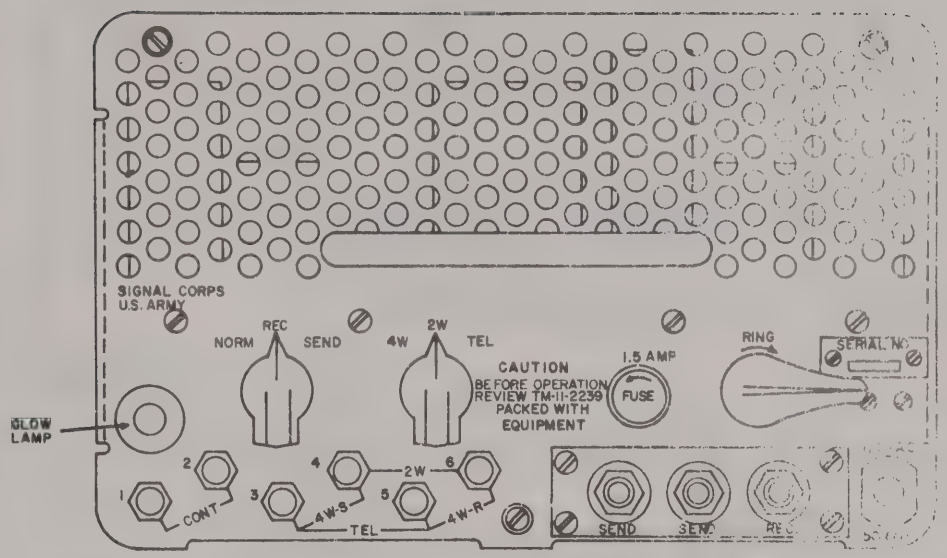


Figure 1–16. Shelter, right side, interior view.

TH-5/TG



TH-22/TG

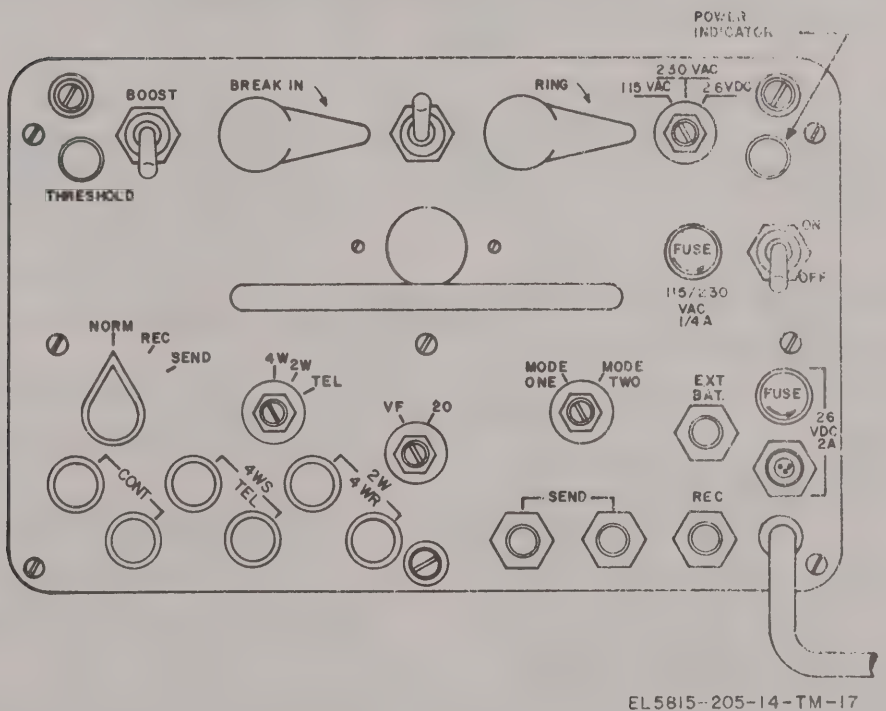


Figure 1-17. TH-5/TG and TH-22/TG, front panels.

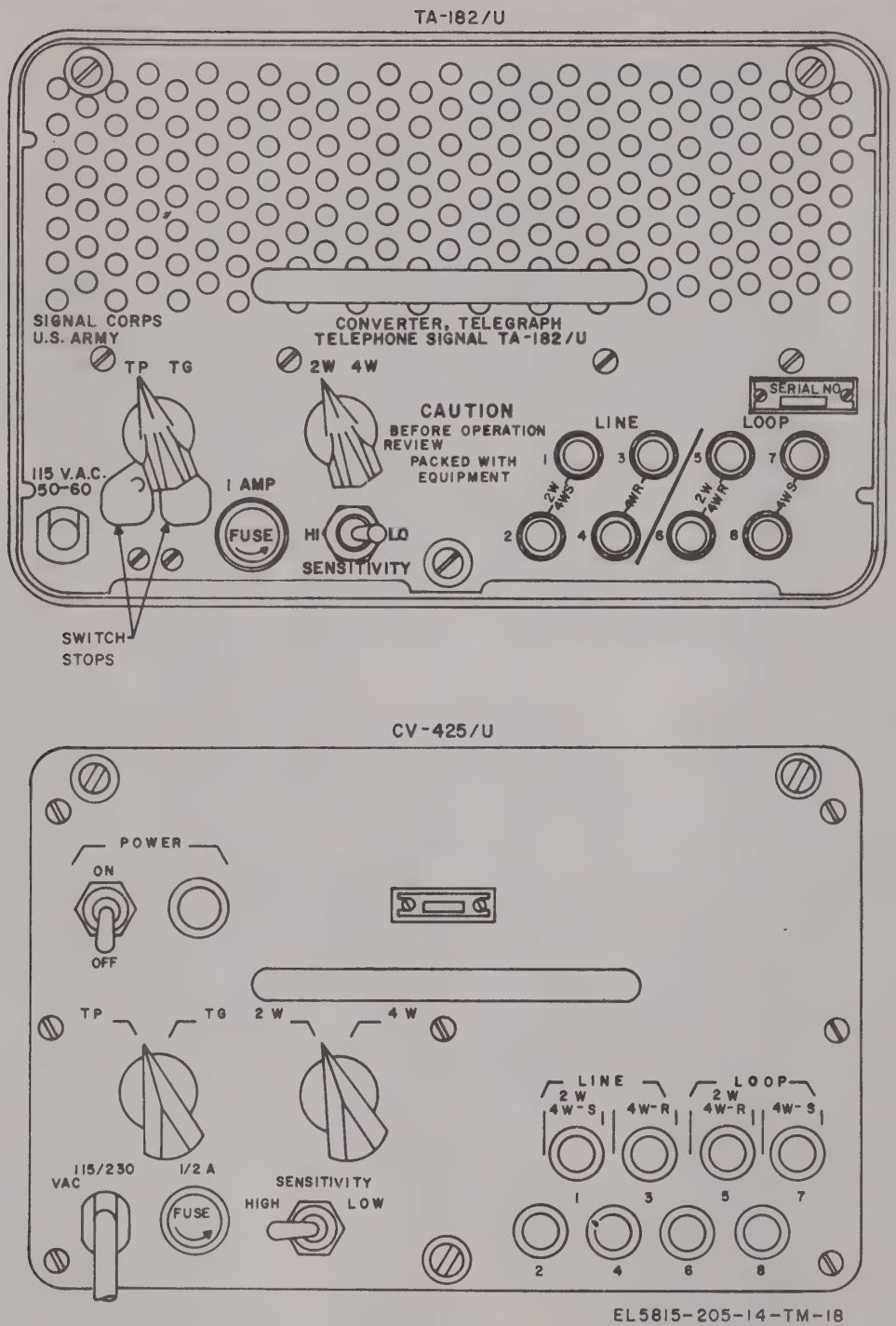


Figure 1-18. TA-182/U and CV-425/U, front panels.

CHAPTER 2

INSTALLATION AND OPERATION

Section I. INSTALLATION AND INTERCONNECTION OF ORGANIZATIONAL EQUIPMENT

2-1. Procedures

Usually, the shelter is received without the organizational equipment (para 1-6) installed.

NOTE

To provide light inside the shelter, perform the procedures given in paragraphs 2-18 through 2-20.

To install the organizational equipment, the installation team will follow the procedures given in *a* through *l* below.

NOTE

If the shelter is received with the organizational equipment installed, unpack and check the equipment, perform the preoperational procedures, make the necessary signal connections, and operate the equipment.

a. Unpack and check the equipment (para 2-2).

b. Install the SB-22/PT (para 2-3).

c. Install the TH-5/TG. TH-22/TG (para 2-4).

d. Install the TT-76(*)/GGC (para 2-5).

e. Install the TT-4(*)/TG (para 2-6).

f. Install the TSEC/KW-7 (para 2-7) (only when authorized).

g. Install the TA-182/U, CV-425/U (para 2-8).

h. Install the TA-312/PT (para 2-9).

i. Install the tool equipments (para 2-10).

j. Install the TT-523(*)/GGC (para 2-5).

k. Interconnect the installed equipment (para 2-11).

l. Perform the organizational equipment installations test (para 2-12 through 2-14).

2-2. Unpacking and Checking

NOTE

When packed for shipment, the shelter of Teletypewriter Central Office AN/MGC-17 is placed in a crate. Shelter uncrating instructions are included in TM 11-5805-204-15.

a. Removing Contents. When preparing the shelter for checking the equipment, proceed as follows:

(1) Unlock and open the shelter door. In the S-169C/MGC-17, unfasten the two web straps which secure each of the dropline boxes to the ladder and remove the dropline boxes from the shelter.

(2) Unfasten the four web straps which secure the ladder to the cable reels (fig. 1-10).

(3) Remove the ladder from the shelter and place it on the ground or against the tailgate of the truck.

(4) Unscrew the cable reel holders which secure the cable reels to the floor and place them in their mountings (fig. 1-6).

(5) Remove the cable reels from the shelter.

b. Checking Contents. Check the contents of the shelter against the list of identifiable components which is contained in the manual holder, (fig. 1-7). When the component list is not available, the table of components (para 1-6) may be used as a general check to indicate the equipment which probably was packed.

c. Unpacking and Checking Organizational Equipment. To unpack and check organizational equipments, refer to the appropriate technical manuals (app A).

2-3. Installation of Manual Telephone Switchboard SB-22/PT
(fig. 1-6)

The switchboard is secured in its mounting to the left wall. A battery box, mounted below the switchboard mounting, is substituted for the normally used battery compartment at the rear of the switchboard. Connecting cables are long enough to allow the removal of switchboard from the mounting for connection, repairs, or troubleshooting.

a. Connections.

(1) Place the switchboard in a convenient place under the switchboard mounting with the front facing the left wall and with the rear door hinge at the bottom.

(2) Open the rear door.

(3) Feed the cable (from the signal duct) designated SB-22/PT through the wire entry nearest pair 17 binding posts of the switchboard.

(4) The wire leads are paired and numbered 1 through 12, 17, NA, and GRD. Connect the wires to the switchboard binding posts as indicated in the chart below:

Binding post pair No.	SB-22/PT cable					
	Upper binding post			Lower binding post		
	Wire No.	Shelter/Wire color		Wire No.	Shelter/Wire color	
		S-169, A, B	S-169C		S-169, A, B	S-169C
1	1	White	White	1	Yellow	Blue
2	2	White	White	2	Orange	Orange
3	3	White	White	3	Black	Green
4	4	White	White	4	Pink or red	Brown
5	5	White	White	5	Light brown	Slate
6	6	White	Red	6	Dark brown	Blue
7	7	White	Red	7	Silver	Orange
8	8	White	Red	8	Dark green	Green
9	9	White	Red	9	Light green	Brown
10	10	White	Red	10	Violet	Slate
11	11	Black	Black	11	Dark blue	Blue
12	12	Black	Black	12	Orange	Orange
17	13	Brown	Brown	13	Black	Black
NA	NA	Violet	Violet			
GND				17	Black	Black

(5) Close the rear door.

b. Installation.

(1) Turn the SB-22/PT around and remove the cover.

(2) Lift and insert the SB-22/PT into its mounting.

(3) Engage the snap catches of the mounting in the D-rings on the underside of the SB-22/PT and secure the snap catches.

(4) Remove the operator's pack from the SB-22/PT.

(5) Remove the three line packs from the accessory kit. Obtain two additional line packs. Install the five line packs in the switchboard.

(6) The accessory kit may be supplied in either a canvas case or a metal box. Store as described in (*a*) or (*b*) below.

(*a*) Place Accessory Kit MX-230/PT (canvas case) in any convenient location.

(*b*) Place Accessory Kit MX-230A/PT (metal box) in the mounting on the right wall and secure with metal strap and fastener.

(7) Install two Batteries BA-30 in the NIGHT ALARM BATTERY box as follows:

(*a*) Open the cover of the battery box.

(*b*) Insert the left battery with its center terminal at the top against the spring; insert the right battery with the centar terminal at the bottom against the positive (+) binding post.

(*c*) Close and fasten the cover.

2-4. Installation of Telegraph Terminal TH-5/TG or TH-22/TG

a. Installation of TH-5/TG's.

Before installing the TH-5/TG's in the shelter, install a line unit C-2894/TG on each TH-5/TG. Refer to TM 11-5805-204-15 for installation instructions.

(1) Remove the cover from each TH-5/TG.

(2) Remove the fuses from each cover and place them in the fuse-holder on the left wall (fig. 1–6).

(3) Remove a set of instruction plates from inside one of the covers and place them in the instruction plate holder on the front wall (fig. 1–8).

(4) Remove the cable clamps, locking nuts, retaining end, and center brackets from the threaded rods on the TH–5/TG mounting rack (fig. 1–6). Also, remove the nuts which help secure the brackets on the rods before the TH–5/TG's are installed.

(5) Place TH–5/TG NO. 1 in the rack (fig. 1–6) and connect the lamp (E9) socket to wires from the signal duct (*b*(1) below). Replace the retaining end bracket on the rod. Position the bracket over the left edge of the TH–5/TG. Replace the locking nut fingertight.

(6) Place TH–5/TG NO. 2 in the rack and connect the lamp (E9) socket to the wires from the signal duct (*b*(1) below). Position the center bracket over the adjacent edges of TH–5/TG's NO. 1 and NO. 2. Replace the locking nut fingertight.

(7) Place TH–5/TG NO. 3 in the rack and connect the lamp (E9) socket to the wires from the signal duct (*b*(1) below). Position the remaining center bracket over the adjacent edges of TH–5/TG NO. 2 and NO. 3 and position the end bracket over the right edge of TH–5/TG NO. 3. Replace the locking nuts fingertight.

(8) Use a wrench to tighten all four locking nuts; do not overtighten.

(9) Replace the cable clamps.

(10) Remove the lamp caps from the TH–5/TG's and place them in a convenient storage location.

(11) Remove the neon lamps from the TH–5/TG's and place them in the lamp sockets on the control box.

(12) Connect the cable (from the signal duct) designated TH–5/TG to each TH–5/TG lamp (E9) socket. The wire leads with pairs designated NO. 1, NO. 2, and NO. 3 connect to NO. 1, NO. 2, NO. 3, respectively.

(13) Connect the cords (from the line unit) to the patching panel as described in paragraph 2–11.

(14) Connect the power cords to the TH–5/TG NO. 1, TH–5/TG NO. 2, and TH–5/TG NO. 3 receptacles in the ac power duct and arrange the power cords neatly; use the cable clamps.

b. Installation of TH–22/TG.

(1) Remove the cover from each TH–22/TG.

(2) Remove the fuses from each cover and place them in the fuseholder on the left wall of the shelter (fig. 1–6).

(3) Remove the cable clamps, locking nuts, retaining end, and center brackets from the threaded rods on the mounting rack (fig. 1–6). Also, remove the nuts which help secure the brackets on the rods before the units are installed.

(4) Place TH–322/TG NO. 1 in the rack (fig. 1–6). Replace the retaining end bracket on the rod. Position the bracket over the left edge of the TH–22/TG. Replace the locking nut fingertight.

(5) Place TH–22/TG NO. 2 in the rack. Position the center bracket over the adjacent edges of TH–22/TG NO. 1 and NO. 2. Replace the locking nut fingertight.

(6) Place TH–22/TG NO. 3 in the rack. Position the remaining center bracket over the adjacent edges of TH–22/TG NO. 2 and NO. 3 and position the end bracket over the right edge of TH–22/TG NO. 3. Replace the locking nuts fingertight.

(7) Use a wrench to tighten all four locking nuts; do not overtighten.

(8) Replace the cable clamps.

(9) Connect the power cords to the TH–5/TG NO. 1, TH–5/TG NO. 2, and TH–5/TG NO. 3 receptacles in the ac power duct and arrange the power cords neatly; use the cable clamps.

2–5. Installation of Teletypewriter Reperforator-Transmitter TT–76(*)/GGC

Before installing the TT–76(*)/GGC, determine that the teletypewriter central office is to be arranged for secure or nonsecure operation. For nonsecure operation, the TT–76(*)/GGC need not be modified. For secure operation, modify the TT–76(*)/GGC as indicated in *a*(1) and (2) below before installing on the mounting shelf.

a. Modification of TT–76(*)/GGC's for Secure Operation.

(1) TT–76(*)/GGC No. 2 as follows:

(*a*) Disconnect the copy light, the four ground straps, and remove the dust cover.

(*b*) Position the TT-76(*)/GGC to allow access to the three cables connected to terminal board TB-1 and disconnect the cables from the terminal board.

(*c*) Remove the three screws, nuts, lockwashers, and clamps holding the cables.

(*d*) Remove the three cables by squeezing the strain reliefs and pushing them through the base (bottom to top). Retain the strain reliefs and tag the cables to indicate that they will be reconnected when the modification is removed.

(*e*) Select and fasten three cables W6 (TR SEND), W7 (REC), and W6 (TD SEND) to the base of the TT-76(*)/GGC as shown in A, figure 2-1. Use the original strain reliefs to fasten the cables.

(*f*) Fasten the ground lugs and the original cable clamps in position shown in B, figure 2-1.

(*g*) Connect the cable leads to terminal board TB-1 as shown in figure 2-1 (TR SEND 1-2, REC 4-5, TD SEND 6-8).

(*h*) Connect a 27,000-ohm resistor to terminal board TB-1 terminals 7-8 as shown in C, figure 2-1 (remove existing lead on terminal 8, tape the end and tuck it aside; insulate resistor leads).

(*i*) Add a label marked CAUTION: Modified per TM 11-5815-205-14.

(2) TT-76(*)/GGC No. 1 as follows:

(*a*) Repeat the procedures in (1) above, except do not install the TR SEND cable (W6). W6 is not required with TT-76(*)/GGC No. 1 (fig. 2-1).

(*b*) Add a label marked CAUTION: Modified per TM 11-5815-205-14.

(3) Install Low Level Signaling Device TT-523A/GGC on TT-76(*)/GGC No. 1 and No. 2 in accordance with paragraphs 2-4, 2-5, and 2-6 of TM 11-5815-338-15.

NOTES

1. TT-76(*)/GGC No. 1 and No. 2 must be "A" model or later; the "plain" model cannot be used.
2. The use of the TT-523/GGC may require more frequent maintenance of transmitter contacts than normal. The low-level keying current is of insufficient value to perform the contact cleaning obtained when the teletypewriters are used for normal (high-level power) operation. No timetable or schedule can be set up at this time for the frequency of cleaning the contacts. Clean and burnish the transmitter contacts as required.

b. Installation. The two TT-76(*)/GGC's shown in figure 1-6 are installed on mounting shelves. The shelves mount the base plate of the TT-76(*)/GGC's. Install the upper TT-76(*)/GGC first.

(1) Remove the bolts, nuts, and lockwashers from the shelf.

(2) Place the TT-76(*)/GGC on the shelf. Align the holes in the vase of the equipment with the holes in the shelf.

(3) Insert the bolts down through the bushings on the base plate. On the right side, the cover must be raised to locate the bushings.

(4) Secure the TT-76(*)/GGC to the shelf by using the bolts, nuts, and lockwashers.

(5) Pull the lower shelf out on its slides and install the second TT-76(*)/GGC ((1) through (4) above).

(6) Install the tape guide on the upper TT-76(*)/GGC (TM 11-5815-238-12.

(7) Install the tape guide and chad bin assembly on the lower TT-76(*)/GGC and shelf (TM 11-5815-238-12.

(8) Ground the equipment as follows: On the TT-76(*)/GGC, the power cord is fitted with a three-pronged plug. Remove the screws that secure the third prong to the plug and turn the prong so it points opposite to the other two prongs. Disconnect the ground lead fastened to the third prong and connect it to the grounding lug on the ac duct near the TT-76(*)/GGC outlets.

(9) Operate the POWER switch on left side of each keyboard to OFF and connect the power cord from each TT-76(*)/TGG to its respective receptacle TT-76 No. 1 or TT-76 No. 2.

2-6. Installation of Teletypewriter TT-4(*)/TG

Before installing the TT-4(*)/TG's, determine that the AN/MGC-17 is to be arranged for secure or nonsecure operation. For nonsecure operation, connect TT-4(*)/TG No. 1 as described in *a* below. For secure operation, con-

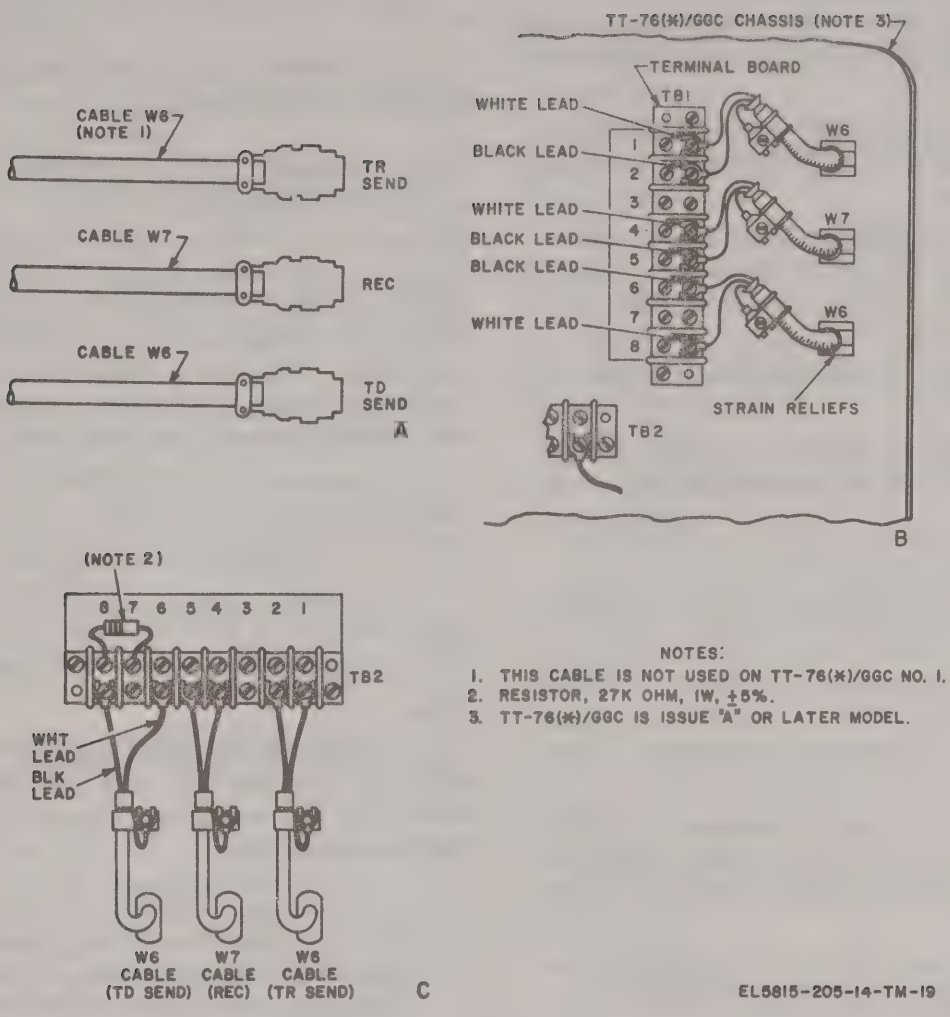


Figure 2-1. Cable connections on Teletypewriter Reperforator-Transmitter TT-76(*)/GGC, modified for secure operation.

nect TT-4(*)/TG No. 1 and 2 as described in *c* and *d* below.

NOTE

TT-4(*)/TG No. 2 is used only during secure operation of AN/MGC-17.

a. Connections, TT-4(*)/TG No. 1 for Non-secure Operation.

Before installing TT-4(*)/TG No. 1 on its mounting shelf (fig. 1-6), two cable assemblies must be connected to the terminal board (TM 11-5815-206-12).

(1) Remove the dust cover.

(2) Disconnect the shortening bar from SEND terminal 2 on the terminal board of the TT-4(*)/TG.

(3) Be sure that BATTERY terminals 5 and 6 are connected by a shortening bar.

(4) Operate the VOICE FREQ. LINE-DC. LINE toggle switch (TM 11-5815-206-12) to VOICE FREQ. LINE, and adjust LINE INCREASE (R2) for minimum resistance.

(5) Remove cable Assemblies CX-4766/U (4 ft. 8¼ in.) and CX-4767/U (4 ft. 8¼ in.) from the storage location and connect them to the line terminal board as follows:

Cable	*Wire color*	*Terminal*	*No.*
CX-4766/U (black plug)	White	Send	1
	Black	Send	2
CX-4767/U (red plug)	Black	Rec	3
	White	Rec	4

(6) Insert the cable assemblies ((5) above) and power cord in the cable bracket on the rear of the machine and replace the dust cover (TM 11-5815-206-12).

b. Installation, TT-4(*)/TG No. 1.

(1) Place the TT-4(*)/TG on its mounting shelf and position it so the rear edge of the TT-4(*)/TG base is under the bracket clamps at the rear of the shelf.

(2) Place the fasteners on the front of the shelf over the edge of the TT-4(*)/TG base and turn the fasteners.

(3) Connect the ground lead of the power cord plug of the TT-4(*)/TG to the ground terminal under the TT-4 receptacle (fig. 1-5) on the ac power duct.

(4) Check to see that the motor switch is at OFF.

(5) Connect the power cord plug to the TT-4 receptacle in the ac power duct (fig. 1-6).

c. Connections, TT-4(*)/TG No. 1 for Secure Operations.

(1) Repeat the procedures in *a*(1) through (4) above.

(2) Connect the spade terminals of a W6 cable to the TT-4(*)/GGC as follows: black lead to terminal 2 and white lead to terminal 1 (see figure 2-2).

(3) Connect the spade terminals of a W7 cable to the TT-4(*)/GGC as follows: black lead to terminal 4 and white lead to terminal 3 (see figure 2-2).

(4) Connect the W6 and W7 ground lugs to the ground posts on the TT-4(*)/GGC.

d. Connections, TT-4(*)/GGC No. 2 for Secure Operations.

(1) Repeat the procedures in *a*(1) through (4) above.

(2) Connect the spade terminals of a W7 cable to the TT-4(*)/GGC as follows: black lead to terminal 4 and white lead to terminal 3 (see figure 2-2).

(3) Connect the W7 ground lug to the TT-4(*)/GGC ground post.

e. Installation, TT-4(*)/GGC No. 2.

(1) Remove four ¼-inch flat washers, four ¼-20 wingnuts, four ¼-inch lockwashers, and four holddown hooks from the shelf. Place two rubber pads on the shelf. Position the TT-4(*)/GGC No. 2 on the shelf and fasten it down with the hardware listed above.

(2) Connect the ground lead of the power cord to the ground terminal on the ac receptacle marked TH-5 NO. 3.

(3) Check to see that the motor switch in at OFF.

(4) Connect the power cord plug to receptacle "TH-5 NO. 3".

2-7. Installation of Communication Security Equipment TSEC/KW-7

The mounting racks on the left wall of the shelter (fig. 1-6) have shelves for mounting two TSEC/KW-7's. The TSEC/KW-7 is received in a reusable shipping case. Remove the equipments from the cases and store the cases in the trailer of the generator set. Prepare, connect, and install the security equipment as follows:

a. Preparation of TSEC/KW-7's (See KAM-143/TSEC).

(1) Operate the 115V/230V switch to 115V.

(2) Operate the LINE INPUT switch to 20 ma.

(3) Operate the LOOP OUTPUT swich to 20 ma.

(4) Operate the WPM SPEED SELECTOR switch to position (60, 67, or 100) as determined by the operating speeds of associated teletype equipments.

NOTE

Do not bypass the contact filters in the associated teletypewriters, as instructed in Section 3106 and Table 3-7 of KAM-143/TSEC.

b. Installation of TSEC/KW-7 in Position No. 1. (fig. 2-2 and 2-3).

(1) Select a W-8 cable. Connect the end of the cable with the stripped leads to the TSEC/KW-7 as follows: black lead to E4, white lead to E5, and shield to E3.

(2) Select a W-9 cable. Connect the end of the cable with the stripped leads to the TSEC/KW-7 as follows: black lead to E1, white lead to E2, and shield to E3.

(3) Select the 16-foot length of stranded wire and cut a 3-foot length of wire from it. Connect this 3-foot length of wire to E3 of the TSEC/KW-7.

(4) Select a TSEC/KW-7 W-2 power cable and connect it to connector J1 on the TSEC/KW-7.

NOTE

Cable W-2 is not a part of the AN/MGC-

17 assemblage but is furnished with the TSEC/KW-7.

(5) Temporarily place the TSEC/KW-7 on an operator's chair in front of the shelf to allow connection of the loop cables.

(6) Connect the W-6 cable from TT-76(*)/GGC No. 1 to LOOP IN CONNECTOR J3 of the TSEC/KW-7.

(7) Connect the W-6 cable from TT-4/TG No. 1 to LOOP IN CONNECTOR J4 of the TSEC/KW-7.

(8) Connect the W-7 cable from TT-76(*)/GGC No. 1 to LOOP OUT CONNECTOR J7 of the TSEC/KW-7.

(9) Connect the W-7 cable from TT-4/TG No. 1 to LOOP OUT CONNECTOR J8 of the TSEC/KW-7.

(10) Insert the black SEND plug of the W-8 cable into the SEND jack of TH-5/TG or TH-22/TG No. 1.

(11) Insert the red RECEIVE plug of the W-9 cable into the REC jack of TH-5/TG or TH-22/TG No. 1.

(12) Remove two ¼-inch flat washers two ¼-20 x ¾ round or planhead screws, two clamping support plates, two support plates, and two ¼-20 wingnuts from the shelf. Position the TSEC/KW-7 on the shelf as shown in figure 2-4; secure with the hardware listed above.

(13) Operate the power switch to OFF and connect the power cord (cable W-2) to receptacle CIPHER 1 in the ac power duct.

c. Installation of TSEC/KW-7 in Position No. 2 (fig. 2-2 and 2-3).

(1) Select a W-8 cable. Connect the end of the cable with the stripped leads to the TSEC/KW-7 as follows: black lead to E4, white lead to E5, and shield to E3.

(2) Select a W-9 cable. Connect the end of the cable with the stripped leads to the TSEC/KW-7 as follows: black lead to E1, white lead to E2, and shield to E3.

(3) Connect the loose end of the 3-foot length of wire attached to terminal E3 of TSEC/KW-7 No. 1, to terminal E3 of TSEC/KW-7 No. 2.

(4) Select a TSEC/KW-7 W2 power cable, and connect it to connector J1 on the TSEC/KW-7.

(5) Release the two transit locks and extend the sliding shelf from the rack; place the TSEC/KW-7 on it to allow connection of the loop cables.

(6) Connect the W-6 cable from TT-76(*)/GGC No. 2 to LOOP IN CONNECTOR J4 of the TSEC/KW-7.

(7) Connect the other W-6 cable from TT-76(*)/GGC No. 2 to LOOP IN CONNECTOR J3 of the TSEC/KW-7.

(8) Connect the W-7 cable from TT-76(*)/GGC No. 2 to LOOP OUT CONNECTOR J7 of the TSEC/KW-7.

(9) Connect the W-7 cable from TT-4/TG No. 2 to J8 (LOOP OUT CONNECTOR) of the TSEC/KW-7.

(10) Select the remaining 13-foot length of stranded wire and cut another 3-foot length from it. Connect one end of this 3-foot length of wire to terminal E3 of TSEC/KW-7 No. 2, and the other end to the nearest electrical system ground terminal.

(11) Insert the black SEND plug of the W-8 cable into the SEND jack of TH-5/TG or TH-22/TG No. 2.

(12) Insert the red RECEIVE plug of the W-9 cable into the REC jack of TH-5/TG or TH-22/TG No. 2.

(13) Remove two ¼-inch flat washers, two ¼-20 × ¾ round or panhead screws, two clamping support plates, two support plates, and two ¼-20 wingnuts from the shelf. Position the TSEC/KW-7 on the shelf as shown in figure 2-4; secure it with the hardware listed above.

(14) Push the sliding shelf into the rack and secure it with the transit lock fasteners. Dress all cables neatly to prevent pinching by the shelf.

(15) Operate the POWER switch to OFF and connect the power cord (cable W-2) to receptacle CIPHER 2 in the power duct.

2-8. Installation of Telegraph-Telephone Signal Converter TA-182/U
(fig. 1-7)

a. Installation. Install the six TA-182/U's or CV-425/U's as follows:

(1) Remove the covers from the TA-182/U or CV-425/U converters.

(2) Remove the fuses from the covers and place them in the fuseholder on the left wall (fig. 1-6).

(3) Remove one set of the instruction plates from inside of one of the covers and place it in the instruction holder on the front wall (fig. 1–8).

(4) Remove the cable clamps, locknuts, retaining end, and center brackets from the threaded rods in the converter mounting rack. Also, remove the nuts which help secure the brackets to the rods before the converters are installed.

(5) Place converter No. 5 in the rack (fig. 1–7) and replace the retaining end bracket on the rod. Position the bracket over the left edge of converter No. 5. Replace the locknut fingertight.

(6) Place converter No. 6 in the rack. Position the center bracket over the edges of converters No. 5 and No. 6 and the end bracket over the right edge of converter No. 6. Replace the locknuts fingertight.

(7) Use a wrench and tighten all three locknuts; do not overtighten.

(8) Replace the cable clamps.

(9) Follow the procedures in (5) through (8) above to install converters in positions No. 3, 4, 1, and 2, respectively.

(10) Remove six identification holders from the storage location.

(11) Remove the front panel of each converter (fig. 1–7) and install the appropriate identification holder in the upper right corner of the panel; use screw, nut, and washer. Replace front panel.

b. Connection. The connections to the binding posts on each of the vf ringers are identical.

(1) Connect the cables (from the signal duct) designated TA–182/U 1 through 6 to the converter as described in the chart below:

Cable	Wire lead	Shelter/Wire color		Converter No.	Converter binding posts
		S–169, A, B	S–169C		
TA–182/U 1	1	White	White	1	LINE 1 4WS 2W
	2	Yellow	Blue	1	LINE 2 4WS 2W
	5	White	White	1	LOOP 5 4WR 2W
	6	Orange	Orange	1	LOOP 6 4WR 2W
TA–182/U 2	1	White	White	2	LINE 1 4WS 2W
	2	Black	Green	2	LINE 2 4WS 2W
	5	White	White	2	LOOP 5 4WR 2W
	6	Pink or red	Brown	2	LOOP 6 4WR 2W
TA–182/U 3	1	White	White	3	LINE 1 4WS 2W
	2	Light brown	Slate	3	LINE 2 4WS 2W
	5	White	Red	3	LOOP 5 4WR 2W
	6	Dark brown	Blue	3	LOOP 6 4WR 2W
TA–182/U 4	1	White	Red	4	LINE 1 4WS 2W
	2	Silver	Orange	4	LINE 2 4WS 2W
	5	White	Red	4	LOOP 5 4WR 2W
	6	Dark green	Green	4	LOOP 6 4WR 2W
TA–182/U 5	1	Black	Black	5	LINE 1 4WS 2W
	2	Dark blue	Blue	5	LINE 2 4WS 2W
	5	Black	Black	5	LOOP 5 4WR 2W
	6	Dark blue	Blue	5	LOOP 6 4WR 2W
TA–182/U 6	1	Black	Black	6	LINE 1 4WS 2W
	2	Orange	Orange	6	LINE 2 4WS 2W
	5	Black	Black	6	LOOP 5 4WR 2W
	6	Orange	Orange	6	LOOP 6 4WR 2W

(2) Operate all TA–182/U power switches on shelter front wall, or CV–425/U front panel power switches to OFF. Insert power cord plugs into TA–182/U front wall receptacles.

(3) Arrange the power cords neatly in the cable clamps.

2–9. Installation of Telephone Set TA–312/PT (fig. 1–7)

Install the telephone set on the right wall as follows:

a. Open the telephone clamp on the wall mounting.

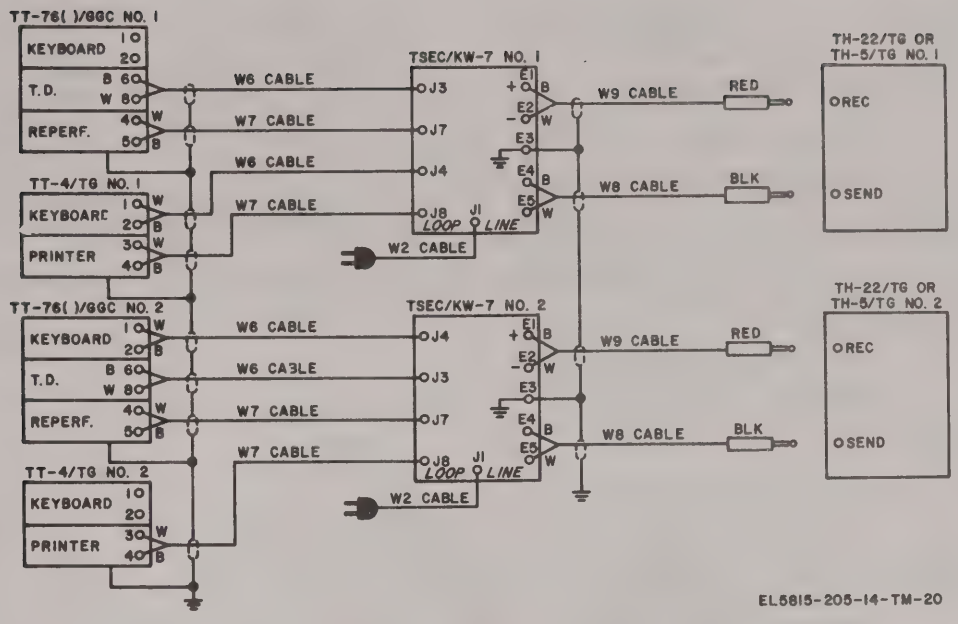


Figure 2–2. Signal schematic-wiring for two half-duplex secure circuits.

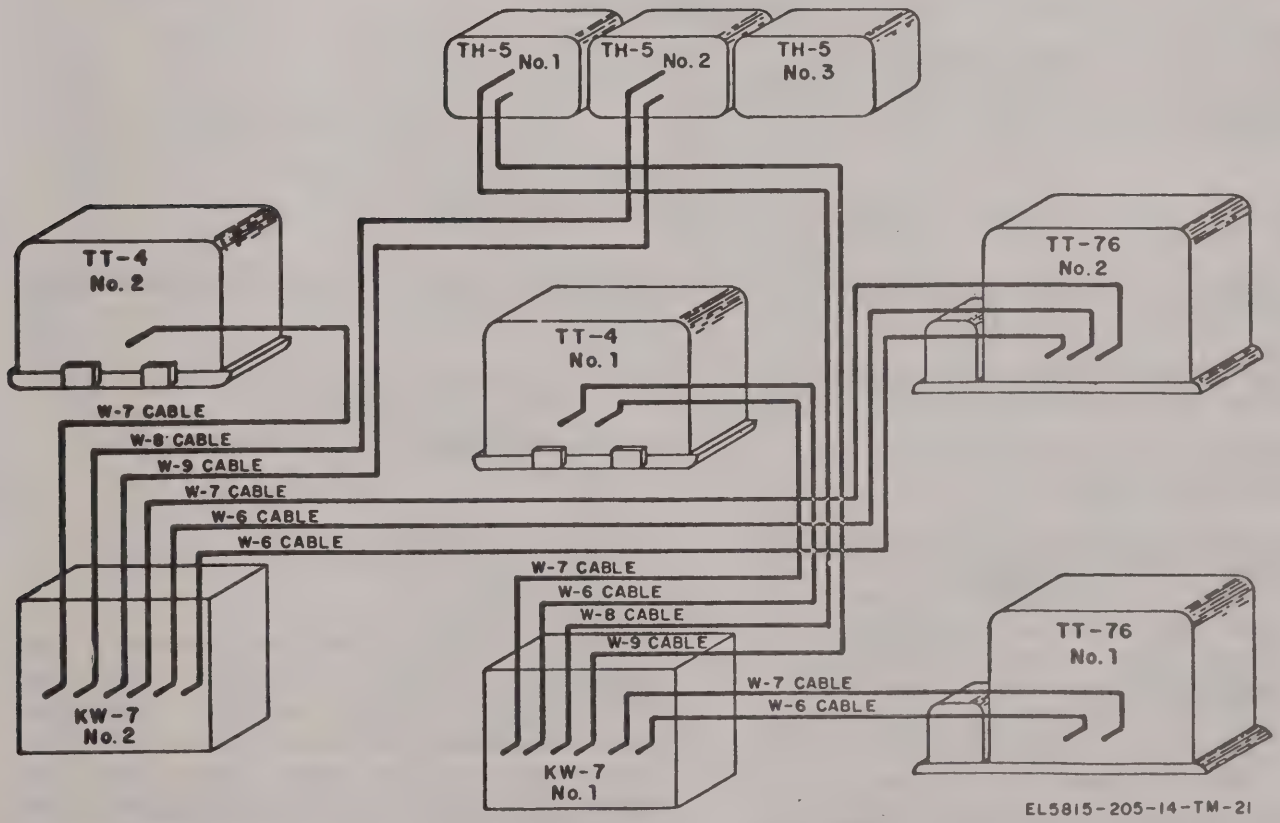


Figure 2–3. Cable routing for TSEC/KW–7 installation in AN/MGC–17.

b. **Remove the telephone set from its canvas carrying case.**

c. Place the telephone set in the holder. Remove the handset from the handset bracket.

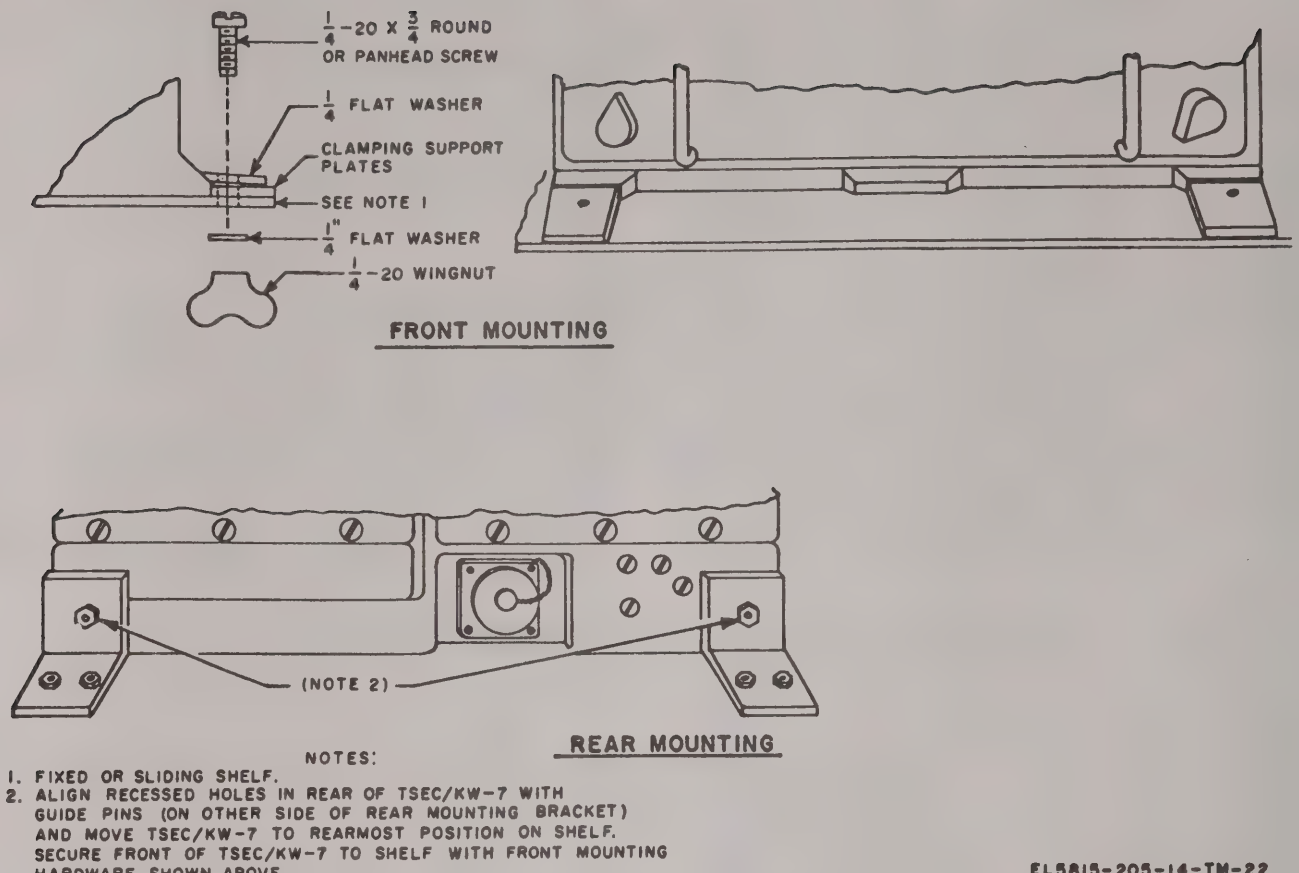

1/4-20 X 3/4 ROUND OR PANHEAD SCREW
1/4 FLAT WASHER
CLAMPING SUPPORT PLATES
SEE NOTE 1
1" 4 FLAT WASHER
1/4-20 WINGNUT
FRONT MOUNTING
(NOTE 2)
REAR MOUNTING
NOTES:
1. FIXED OR SLIDING SHELF.
2. ALIGN RECESSED HOLES IN REAR OF TSEC/KW-7 WITH GUIDE PINS (ON OTHER SIDE OF REAR MOUNTING BRACKET) AND MOVE TSEC/KW-7 TO REARMOST POSITION ON SHELF. SECURE FRONT OF TSEC/KW-7 TO SHELF WITH FRONT MOUNTING HARDWARE SHOWN ABOVE.
EL5815-205-14-TM-22

Figure 2-4. Mounting details for TSEC/KW-7.

d. Replace and fasten the telephone clamp over the telephone set.

e. Replace the handset in the handset bracket and fasten the handset strap over the handset.

f. Remove the telephone cord from the storage location.

g. Connect the leads of the telephone cord to the telephone set binding posts.

h. Insert the plug of the telephone cord in the LB PHONE jack on the JACK & BINDING POST panel (fig. 1-8).

2-10. Tool Equipment

a. Tool Equipment TE-49. Place Tool Equipment TE-49 in its storage mounting (fig. 1-10) and fasten the web straps.

b. Tool Equipment TE-33. Place two Tool Equipments TE-33 in any convenient storage location.

2-11. Connection of TH-5/TG's or TH-22/TG's, TT-4(*)/GGC No. 1, and TT-76(*)/GGC's to patching Panel

NOTE

The teletypewriters are connected to the patching panel for nonsecure operation only.

The cords and plugs which are connected to the bottom row of jacks of the patching panel must be inserted through the right side entry of the panel and routed to the front of panel before being plugged into the proper jacks. Open the cover on the lower row of jacks before beginning operation.

a. Telegraph Terminals TH-5/TG. Connect the cords attached to the three CX-2498/TG line units as indicated below.

Equipment Type No.	Plug	Patching panel jack
TH-5/TG NO. 1	Red	TH-5 NO. 1 LINE RED
	Black	TH-5 NO. 1 LINE BLACK
TH-5/TG NO. 2	Red	TH-5 NO. 2 LINE RED
	Black	TH-5 NO. 2 LINE BLACK
TH-5/TG NO. 3	Red	TH-5 NO. 3 LINE RED
	Black	TH-5 NO. 3 LINE BLACK

b. Teletypewriter TT-4(*)/TG No. 1. Connect the cords attached to the TT-4(*)/TG as indicated in the chart below.

Equipment TT-4(*)/TG	Plug	Patching panel jack
No. 1	Red	TT-4 RED
No. 1	Black	TT-4 BLACK

c. Teletypewriter Reperforator-Transmitters TT-76(*)/GGC. Remove two Electrical Special Purpose Cable Assemblies CX-4768/U (5 ft. 6 in.) from the storage location. Insert one end of each CX-4768/U into the TR jack on the right side of each TT-76(-)/GGC (TM 11-5815-238-12).

Equipment TT-76(*)/GGC	Plug	Patching panel jack
NO. 1	Red REC	TT-76 NO. 1 REC RED
NO. 1	Black TR send	TT-76 NO. 1 SEND BLACK
NO. 1	Gray TD send	TT-76 NO. 1 TD GRAY
NO. 1	CX-4768/U	TT-76 NO. 1 TR
NO. 2	Red REC	TT-76 NO. 2 REC RED
NO. 2	Black TR send	TT-76 NO. 2 SEND BLACK
NO. 2	Gray TD send	TT-76 NO. 2 TD GRAY
NO. 2	CX-4768/U	TT-76 NO. 2 TR

d. Telegraph Terminal TH-22/TG. When the facility is equipped with TH-22/TG's, connect the cords attached to the three units as indicated below.

NOTE

Telegraph Terminals TH-22/TG and TH-5/TG are physically and functionally interchangeable.

Equipment TH-22/TG	Plug	Patching panel jack
NO. 1	Red	TH-22 NO. 1 LINE RED
NO. 1	Black	TH-22 NO. 1 LINE BLACK
NO. 2	Red	TH-22 NO. 2 LINE RED
NO. 2	Black	TH-22 NO. 2 LINE BLACK
NO. 3	Red	TH-22 NO. 3 LINE
NO. 3	Black	TH-22 NO. 3 LINE BLACK

2-12. Organizational Equipment Installation Test

Perform the following preliminary procedures (*a* through *n* below), check the ground and power connections, check test procedures for nonsecure teletypewriter operation (para 2-13) and check test procedures for secure teletypewriter operation (para 2-14).

a. Energize the ac circuits (para 2-20).

b. Check to see that the power switches of the organizational equipment are at OFF.

c. Perform the preliminary starting and presetting procedures for the TT-4(*)/TG and TT-76(*)/GGC's as described in their technical manuals (app A). Arrange the TT-76(*)/GGC for 20-ma neutral operation.

d. Operate the OPR POS circuit breaker on the POWER DISTRIBUTION PANEL to ON.

e. Check to see that the neon lamp above the circuit breaker is lighted.

f. Perform the starting procedures for the TT-4(*)/TG and TT-76(*)/GGC's as described in their technical manuals (app A).

g. Test the TT-4(*)/TG and TT-76(*)/GGC's as described in their technical manuals (app A).

h. Operate the SEND-REC-NORM switch on all TH-5/TG's or TH-22/TG's to NORM.

i. Operate the TP-TG switch on all vf ringers to TG.

j. Operate the 2W-4W switch on all vf ringers to 2W.

k. Operate the three TH-5/TG switches (fig. 1-6) to ON.

l. Check to see that the neon lamp corresponding to each TH-5/TG switch is lighted.

m. Operate all TA-182/U switches (fig. 1-8) to ON.

n. Check to see that the neon lamp corresponding to each TA-182/U switch is lighted.

2-13. Nonsecure Teletypewriter Operation, Testing Procedures

a. Test Setup.

(1) Check to be sure that all patches between the TH-5/TG's or TH-22/TG's, TT-76(*)/GGC's, TT-4(*)/TG, and patching panel (para 2-11) have been properly connected.

(2) On each TH-5/TG (No. 1, No. 2, and No. 3), operate the 4W-2W-TEL switch to 2W.

(3) On the line unit of each TH-5/TG, operate the 4W FULL DUPLEX-NORMAL switch to NORMAL, and the 2W SPEECH PLUS 4W-NORMAL 2W-4W switch to NORMAL 2W.

(4) Make the following connections from the equipment to the patching panel:

Equipment		
Type No.	*Jack*	*Patching panel jack*
TH-5/TG NO. 1	LOOP SEND	TT-76 NO. 1 SEND
TH-5/TG NO. 1	LOOP SEND	TT-76 NO. 1 TD
TH-5/TG NO. 1	LOOP REC	TT-76 NO. 1 REC
TH-5/TG NO. 2	LOOP SEND	TT-76 NO. 2 SEND
TH-5/TG NO. 2	LOOP SEND	TT-76 NO. 2 TD
TH-5/TG NO. 2	LOOP REC	TT-76 NO. 2 REC
TH-5/TG NO. 3	LOOP SEND	TT-4 SEND
TH-5/TG NO. 3	LOOP REC	TT-4 REC

(5) Make the following patches between the jacks on the patching panel:

Patching panel	
From jack	*To jack*
TH-5 LINE 1 4WS 2W	TA-182 LOOP 1
TH-5 LINE 2 4WS 2W	TA-182 LOOP 2
TA-182 LINE 1	TA-182 LINE 2
TH-5 LINE 3 4WS 2W	SB-22 OPR TH-5

b. Ringing Test.

(1) On TH-5/TG No. 1, operate the RING switch. The buzzer on TH-5/TG No. 2 should sound.

(2) On the TH-5/TG No. 2, operate the RING switch. The buzzer on TH-5/TG No. 1 should sound.

(3) On TH-5/TG No. 3, operate the RING switch. The drop on line 17 on the switchboard should operate.

(4) Move the following plugs on the patching panel:

Patching panel	
From jack	*To jack*
TA-182 LOOP 1	TA-182 LOOP 3
TA-182 LOOP 2	TA-182 LOOP 4
TA-182 LINE 1	TA-182 LINE 3
TA-182 LINE 2	TA-182 LINE 4

(5) Repeat (1) and (2) above.

(6) Use field wire and strap binding posts pair 11 to pair 12 (top to top; bottom to bottom) on the SIGNAL BINDING POSTS box.

(7) On the switchboard, insert the plug of line 17 into the jack of line 11.

(8) On TH-5/TH No. 3, operate the RING switch. The drop on line 12 and 17 on the switchboard should operate.

(9) Remove the plug of line 17 from jack of line 11 and insert it into the jack of line 12.

(10) On TH-5/TG No. 3, operate the RING switch. The drops on line 11 and 17 on the switchboard should operate.

(11) Restore the switchboard to normal.

c. Transmission Test.

(1) Transmit from the keyboard or transmitter-distributor of TT-76(*)/GGC No. 1. Copy of the message should be received on the reperforator of TT-76(*)/GGC No. 1 and No. 2.

(2) Transmit from the keyboard of transmitter-distributor of TT-76(*)/GGC No. 2. Copy of the message should be received on the reperforator of TT-76(*)/GGC No. 1 and No. 2.

(3) Place a test tape in transmitter-distributor No. 1 and operate the STOP-START-FEED-RETRACT switch to START. The test message should be received on TT-76(*)/GGC No. 1 and No. 2.

(4) Repeat the test given in (3) above, using transmitter-distributor No. 2.

(5) Change the following patches on the patching panel:

Patching panel	
From jack	*To jack*
TA-182 LOOP 3	TA-182 LOOP 1
SB-22 OPR TH-5	TA-182 LOOP 2
TA-182 LINE 3	TA-182 LINE 1
TA-182 LINE 4	TA-182 LINE 2

(6) Transmit from the keyboard of the TT-4(*)/TG. Copy of the message should be received on the reperforator of the TT-76(*)/GGC No. 1 and on the TT-4(*)/TG.

(7) Transmit from the keyboard or transmitter-distributor of TT-76(*)/GGC No. 1. Copy of the message should be received on the TT-4(*)/TG, and on the reperforator of the TT-76(*)/GGC No. 1.

d. Procedure of Completion of Test.

(1) Remove all patches from the patching panel except the permanent connections under the hinged cover (para 2-11).

(2) Remove all field wire connections from the binding posts on the SIGNAL BINDING POSTS box.

(3) Turn off the TT-4/TG and TT-76(*)/GGC No. 1 and No. 2.

2-14. Secure Teletypewriter Operation, Testing Procedures

Perform these test procedures only after it has been determined that the AN/MGC-17 will be operated in the secure mode. The test procedures are not complicated; however the process of con-

verting from nonsecure to secure operation is complex, time consuming, and requires requisitioning of communication security equipments and attendants. Unless the AN/MGC-17 is to be employed in a secure system after the test procedures are completed, testing the assemblage for secure operation is unnecessary.

a. Test Setup.

(1) See that the TT-76(*)/GGC's have been modified and are connected for secure operation (para 2-5).

(2) See that the TT-4(*)/TG's have beeen connected for secure operation (para 2-6).

(3) See that the communication security equipments have been prepared, installed, and connected as indicated in paragraph 2-7.

(4) Check that the line sides of the TH-5/TG (or TH-22/TG) No. 1 and No. 2 are properly connected to the patching panel and that the 4W-2W-TEL switches are operated to the 2W position.

NOTE

If the TH-5/TG's are used, operate the 4W FULL DUPLEX-NORMAL switch on the line unit of each TH-5/TG to the NORMAL position and the 2W SPEECH PLUS 4W-NORMAL 2W-4W switch to the NORMAL 2W position.

(5) Operate the two position switch on each Low Level Signaling Device TT-523A/GGC to the TD SEND-TR SEND/RCV position.

(6) Operate the SELECTOR switch to position 1, TD SEND-TR SEND-RECEIVE on each TT-76(*)/GGC.

(7) Make the following connections on the patching panel:

From jack	*To jack*
TH-5 LINE 1 4WS 2W or TH-22 LINE 1 2W 4WR	TH-5 LINE 2 4WS 2W or TH-22 LINE 2 2W 4WR

NOTE

Testing of the 4-wire operation of the line sides of the TH-5/TG or TH-22/TG is not required. The 2-wire test patch setup operates the equipments to their full capacity.

b. Test Procedures. Apply ac power and operate all power ON-OFF switches on ON for all equipments involved in the test setup.

(1) Arrange TSEC/KW-7 No. 1 for SEND operation (see KAM-143/TSEC, KAO-83/TSEC), and perform test procedures (2) and (3) below.

(2) Transmit a test message from the transmitter-distributor of TT-76(*)/GGC No. 1. A copy of the message should be received on the reperforator of TT-76(*)/GGC No. 2 and on TT-4(*)/TG No. 2. A home copy of the message should be received on the reperforator of TT-76(*)/GGC No. 1 and on TT-4(*)/TG No. 1.

(3) Transmit a test message from the keyboard of TT-4(*)/TG No. 1. A copy of the message should be received on the reperforator of TT-76(*)/GGC No. 2 and on TT-4(*)/TG No. 2. A home copy of the message should be received on the reperforator of TT-76(*)/GGC No. 1 and on TT-4(*)/TG No. 1.

(4) Arrange TSEC/KW-7 No. 2 for SEND operation, and perform test procedures (5), (6), and (7) below.

(5) Transmit a test message from the keyboard or transmitter-distributor of TT-76(*)/GGC No. 2. A copy of the message should be received on the reperforator of TT-76(*)/GGC No. 1 and on the printer of TT-4(*)/TG No. 1. A home copy of the message should be received on the reperforator of TT-76(*)/GGC No. 2 and on the printer of TT-4(*)/TG No. 2.

(6) Operate the two-position switch on the TT-523A/GGC, installed in TT-76(*)/GGC No. 2, to TD SEND-LOCAL PUNCH-LOCAL RE-PUNCH. Operate the SELECTOR switch on TT-76(*)/GGC No. 2 to TD SEND-LOCAL PUNCH position.

(7) Simultaneously transmit two (2) test messages from TT-76(*)/GGC No. 2, one message from the transmitter-distributor and one from the keyboard. The message transmitted from the keyboard should be received on the reperforator of TT-76(*)/GGC No. 2. The message transmitted from the transmitter-distributor should be received on the reperforator of TT-76(*)/GGC No. 1 and the printed of TT-4(*)/TG No. 1.

(8) Remove all patch cords (*a*(7) above) from the patching panel. Operate all power ON-OFF switches to OFF on all equipments involved in the tests. Remove ac power.

Section II. PREOPERATIONAL PROCEDURES

2-15. Siting

a. The location of the AN/MGC-17 will depend upon its use in the division area type communications system. The considerations affecting the siting of the AN/MGC-17 and the factors governing the distance of the AN/MGC-17 to the other shelters in the system are covered in TM 11-5805-204-15.

b. When the shelter is placed on the ground, it should be located on firm, dry ground with good drainage. The site should be prepared and leveled and, if possible, the shelter should be placed on concrete blocks or wooden beams.

c. Place the generator set approximately 75 feet from the shelter.

2-16. Installation of Shelter

NOTE

To install the shelter on the ground or on a truck, four men and a crane, winch, or helicopter capable of lifting 2,000 pounds are required.

a. Loading Shelter (fig. 2-5). If the shelter is to be loaded on a truck, proceeed as follows:

(1) Use the sling hooks nearest the turnbuckles and hook the four sling assemblies to the shelter lifting eyes.

(2) Lay the sling assemblies on top of the shelter.

(3) Hook the four sling hooks in the lifting ring.

(4) Slip the lifting ring over the hook of the lifting device.

WARNING

To avoid injury to personnel and damage to equipment, only the personnel engaged in the actual loading operation should be permitted near the truck, lifting device, and shelter. To eliminate confusion, all instructions must come from the loading crew supervisor.

(5) Tie a 1/2-inch guide rope (at least 15 feet long) to each of the rear towing eyes.

(6) Check to see that all tools and equipment are removed from the truck body and lower the tailgate.

(7) Slowly lift the shelter from the ground to a position high enough to clear the truck body.

(8) Back the truck into position under the shelter.

WARNING

All personnel must remain clear of the truck while the shelter is being lowered into position.

(9) Position a man at each of the guide ropes to hold the shelter in position. Slowly lower the shelter into the truck body.

NOTE

The door of the shelter must be at the rear of the truck and the front of the shelter must be abutted against the front of the truck body.

(10) Remove the lifting ring from the lifting hook and disassemble the lifting ring and sling hooks.

(11) Remove the four sling hooks from the shelter lifting eyes.

(12) Remove the guide ropes.

b. Securing Shelter to Truck (fig. 2-6).

(1) Use the sling hooks at the end farthest from the turnbuckles and hook each of the four sling assemblies to a tiedown eye of the shelter.

(2) Use the sling assembly which is atttached to the tiedown eye at the front of the shelter and place the bracket on the other end of the sling assembly under the side of the rail, at the rear.

(3) Use the sling assembly which is attached to the tiedown eye at the rear of the shelter and place the bracket on the other end of the sling assembly under the front of the side rail.

(4) Repeat the procedures in (1) through (3) above to secure the other side of the shelter.

CAUTION

Do not overtighten the turnbuckles. To prevent twisting the shelter in the truck body, tighten all the turnbuckles at the same time.

c. Unloading. To unload the shelter from the truck, reverse the procedures given in *a* and *b* above, and mount the shelter on the ground (para 2-15).

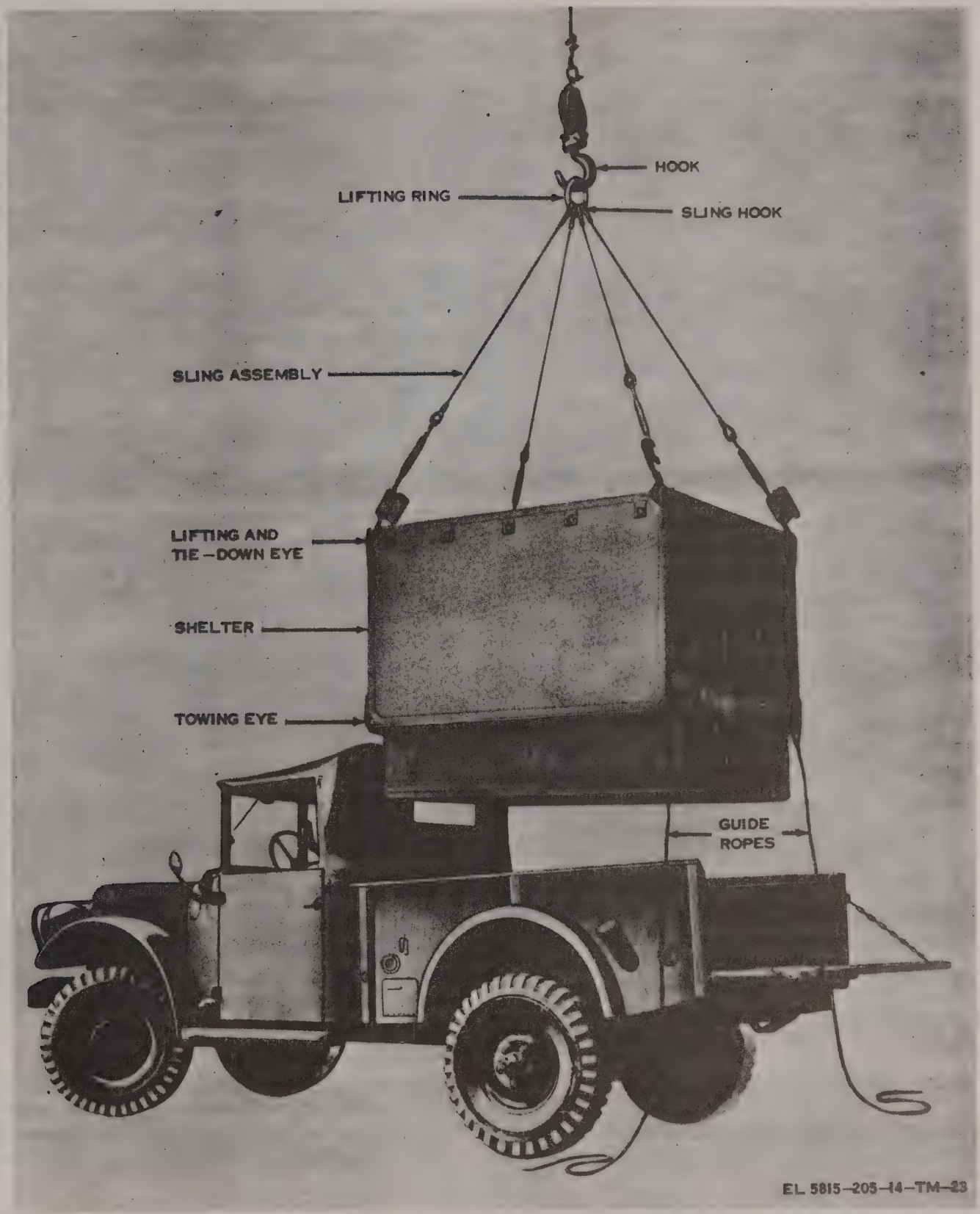


Figure 2-5. Loading shelter.

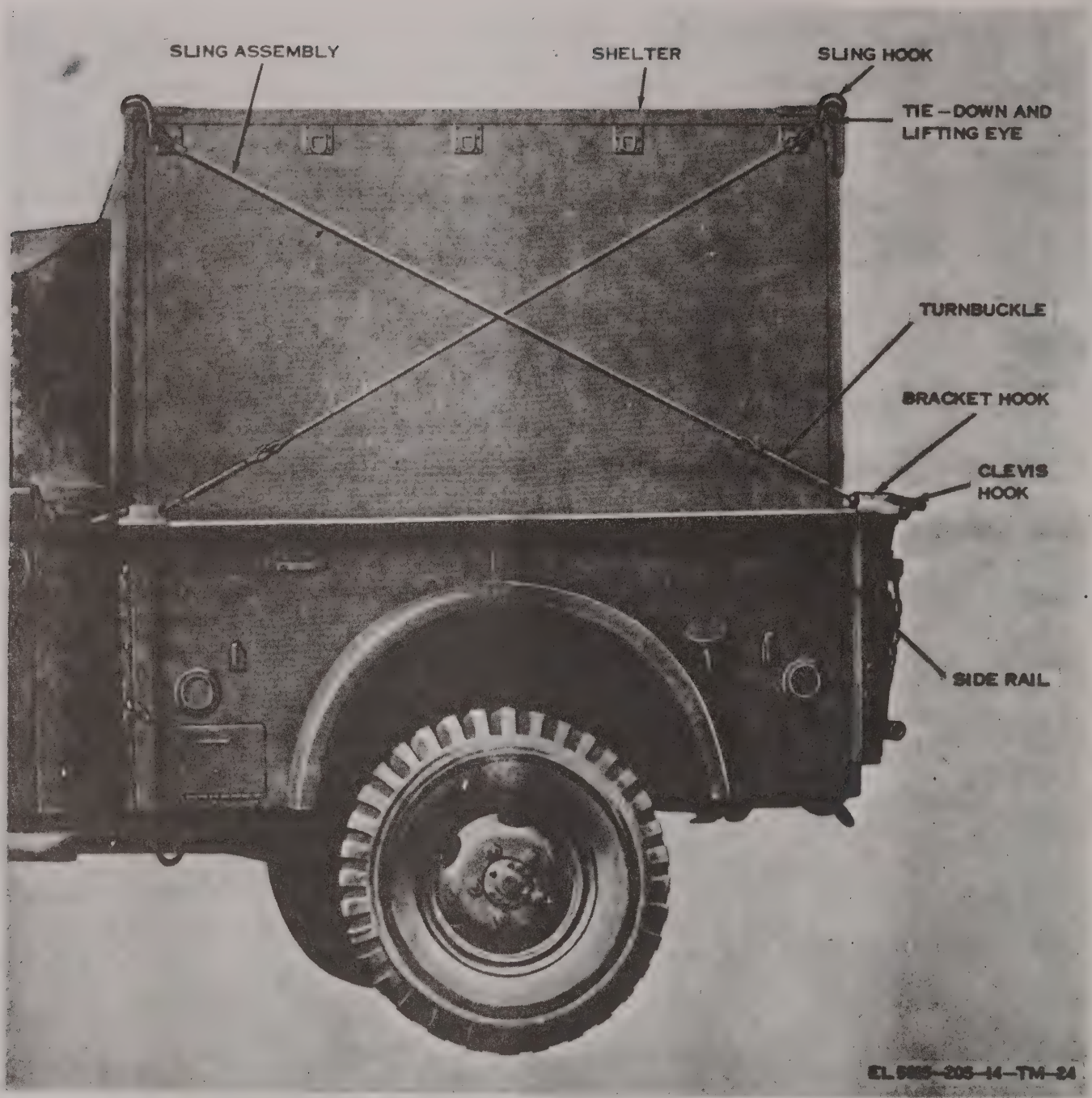


Figure 2-6. Shelter mounted on truck.

2-17. Control and Instruments

This paragraph describes, locates, illustrates, and gives the function of the controls and instruments used in Teletypewriter Central Office AN/MGC-17. The controls and instruments for the organizational equipment are covered in their respective technical manuals (appx A).

a. Power Distribution Panel (fig. 1–13).

Control of instrument	*Function and description*
MAIN circuit breaker (2 ganged circuit breakers 8A and 8B).	Rating: 50 amperes, two-position ON-OFF switch. Provides overload protection for incoming 115-volt ac power supply. Controls ac power supply to the other circuit breakers.
Circuit breakers:	
1-LIGHTS	Rating: 15 amperes, two-position ON-OFF switches. Provides overload protection to all lighting devices. Provides overload protection to the organizational equipment.
2-OPR POS	Provides overload protection to blower No. 1.
3-BLOWER 1	Provides overload protection to blower No. 2.
4-BLOWER 2	Provides overload protection to convenience receptacle.
5-CONVENIENCE RECEPTACLE.	Provides overload protection to HEATER receptacle.
6-HEATER	Rating: 12.3 amperes, two-position ON-OFF switch, protecting the power unit from being overloaded.
7-OVERLOAD	
VOLTAGE meter (voltmeter (0–150 scale)).	Indicates ac voltage input to shelter.
CURRENT meter (ammeter (0–50 scale)).	Indicates amount of alternating current used by shelter equipment.

b. Miscellaneous Switches.

Control of instrument	*Function and description*
NEON switch (fig. 1–9)	Two-position ON-OFF switch. Controls neon lamp.
NORMAL-BLACKOUT switch (fig. 1–9).	Two-position ON-OFF switch. Controls all lighting in shelter except the neon lamp.
	SW pos — *Function* NORMAL — Permits lights to be controlled by their individual switches. BLACKOUT — Permits door microswitch to control all lights except the neon lamp.
Door microswitch (fig. 1–9)	Controls all lighting, except neon lamp, when NORMAL-BLACKOUT switch is on BLACKOUT. When the door is closed the lights go on.
FLUORESCENTS switch (fig. 1–9).	Two position ON-OFF switch. Controls all fluorescent lights.
TA–182/U No. 1 through No. 6 switches on the front wall (fig. 1–8).	Two position ON-OFF switches. Controls ac power to vf ringers No. 1 through No. 6.
TH–5/TG No. 1 through No. 3 switches on the left wall (fig. 1–6).	Two position ON-OFF switch. Controls ac power to TH–5/TG's (or TH–22–TG's No. 1 through No. 3).
NIGHT ALARM switch (fig. 1–6).	Two position ON-OFF switch. Controls NIGHT ALARM buzzer.

c. Electrical Space Heater HD–375/U.

Control of instrument	*Function and description*
OFF-HEAT-FAN ONLY switch	Three-position switch. *SW pos* — *Function* OFF — Cuts off ac power to heater. HEAT — Applies ac power to the heater element and fan motor. FAN ONLY — Applies ac power to the fan motor only.
OFF-HI-MED-LO switch	Four-position switch. Controls amount of heat from heater.
RESET circuit breaker	Rating: 15 amperes. Overload and overheat protection to heater.

d. Switch Box SA–331/U.

Control of instrument	*Function and description*
POWER SUPPLY switch	Two-position switch. Permits transfer of power from one power source to another. *SW pos* — *Function* NO. 1 — Connects the OUTPUT receptacle to the INPUT NO. 1 receptacle on the switchbox. NO. 2 — Connects the OUTPUT receptacle to the INPUT NO. 2 receptacle on the switchbox.

2-18. Grounding

To reduce the hazard of electrical shock, Teletypewriter Central Office AN/MGC-17 must be properly grounded before connecting the shelter to the power source. Select a site for the ground rod so it will not interfere with the entrance to the shelter, field wires, or power and signal cables. Ground both the shelter and the generator set as follows:

a. Shelter.

(1) Loosen the fasteners and lift the cover of the SIGNAL & POWER ENTRANCE box (fig. 1-12). Straighten the stays to hold the cover up.

(2) Fold the side flaps out from under the cover and hook them onto the retaining studs at each side of the SIGNAL & POWER ENTRANCE box.

(3) Remove the switchbox (fig. 1-6), the ground rod (fig. 1-7), and the sledge hammer (fig. 1-8) from their mountings.

(4) Install the ground rod as follows:

(*a*) Select the lowest, dampest site within 10 feet of the shelter, preferably in clay or loamy soil.

(*b*) Scoop out a small hole about 6 inches deep in the selected location.

(*c*) Remove any paint or grease from the ground rod.

(*d*) Drive the ground rod into the hole until the top is approximately 3 inches above the bottom of the hole.

(*e*) Saturate the ground around the rod with water. Keep the ground around the rod moist.

(5) Remove the ground lead from the ACCESSORIES & SPARES cabinet.

(6) Connect one end of the ground lead to the ground rod and the other end to the GRD lug (fig. 1-12) in the SIGNAL & POWER ENTRANCE box.

b. Generator Set.

(1) Remove the ground rod from its mounting.

(2) Install the ground rod (*a*(4) above).

(3) Mount the switchbox on the trailer (fig. 1-1).

(4) Remove the ground lead from the ACCESSORIES box in the generator set.

(5) Connect one end of the ground lead to the ground rod and the other end to the GND lug on the switchbox.

2-19. Power Connection

Before making any power connections, see that all circuit breakers and switches are at OFF (fig. 1-9 and 1-13).

WARNING

Both the shelter and the generator set must be grounded before power is connected.

a. Generator Set. When the generator set is used to supply power, proceed as follows:

(1) Remove the power cable and power stubs from their cable reels (fig. 1-10).

(2) Connect the red and white leads of one power stub to neutral terminal and the black lead to the positive terminal of the filter box of one generator set.

(3) Remove the cover from the connector of the power stub ((2) above) and connect the power stub to the INPUT No. 1 receptacle on the switchbox.

(4) Connect the red and white leads of the other power stub to the neutral terminal and the black lead to the positive terminal of the filter box of the other generator set.

(5) Remove the cover from the connector of the power stub ((4) above) and connect the power stub to INPUT No. 2 receptacle on the switchbox.

(6) Remove the covers from both connectors of the power cable and connect the female connector to the POWER IN receptacle in the SIGNAL & POWER ENTRANCE box (fig. 1-12) and the other connector to the OUTPUT receptacle on the switchbox.

b. Commercial Power Source. When a commercial power source is used, proceed as follows:

(1) Disconnect the power from the commercial power source terminals.

(2) Remove the power cable and one power stub from their reel (fig. 1-10).

(3) If the power supply is 50-60 Hz, 115, volts, single-phase, connect the red and white

leads of the power stub to the neutral terminal and the black lead to one of the other terminals.

(4) If the power supply is 50–60 Hz, 120/208 volts, four-wire, three-phase grounded neutral distribution system, connect the red and white leads to the neutral wire and the black lead to either phase 1, phase 2, or phase 3 terminal.

(5) Remove the covers from the connector of the power stub and junction box (fig. 1–9); connect the power stub to the male side of the junction box.

(6) Remove the cover from the male connector of the power cable and connect it to the other receptacle of the junction box.

(7) Remove the covers from the female connector of the power cable and the POWER IN receptacle in the SIGNAL & POWER ENTRANCE box and interconnect the connector and receptacle.

2–20. Energizing Ac Circuits

a. When the generator set is used to supply the power, start the power unit.

b. When a commercial power source is used, restore power to the source terminals.

c. Operate the MAIN circuit breaker to ON (fig. 1–13).

c. Operate the MAIN circuit breaker to ON (fig. 1–13).

d. Check the voltmeter. It should indicate 115 volts ac.

e. Check the ammeter. It should indicate zero.

f. Operate the LIGHTS circuit breaker to ON.

g. Operate the NEON and FLUORESCENTS switches (fig. 1–9) to ON.

h. Operate the NORMAL-BLACKOUT switch to NORMAL. When blackout conditions are required, operate the switch to BLACKOUT.

CAUTION

Open the blower vents and the air filter cover on the outside of the shelter before operating the blowers.

i. Operate BLOWER 1 and BLOWER 2 circuit breakers to ON. Check to see that the blowers are operating. Operate BLOWER 1 or BLOWER 2 circuit breaker to OFF. One of the blowers is used as a spare.

j. Operate the HEATER circuit breaker to ON as required.

k. Operate the heater OFF-HEAT-FAN ONLY switch to the position required.

l. Check the ammeter. It should indicate less than 16 amperes.

Section III. SIGNAL CONNECTIONS

2–21. Circuit Planning

The AN/MGC–17 is normally connected to the SB–611/MRC through a 26-pair cable. In the AN/MGC–17, 19 pairs are connected in parallel with binding posts in the SIGNAL BINDING POSTS box and terminated inside the shelter; seven pairs are unterminated spares. One pair, terminated in the JACK & BINDING POSTS panel, is used for intershelter communications; 12 pairs, terminated in the SB–22/PT, are used for switching of local or trunk circuits; 6 pairs, terminated in the patching panel, are used for the three teletypewriter equipments (3 full-duplex or 3 half-duplex circuits). When the 26-pair receptacle is used to connect a cable to the SB–611/MRC, the corresponding binding posts are not available for local circuits unless dummy plugs are inserted in the patching panel of the SB–611/MRC.

a. Local Circuits on Field Wire. Local circuits are connected to binding posts in the SIGNAL BINDING POSTS box or to a dropline box.

(1) *SIGNAL BINDING POSTS box.* Local circuits are connected through the SIGNAL BINDING POSTS box by connecting field wire to a pair of binding posts (para 2–23).

(2) *Dropline box.* Local circuits are connected through a dropline box by connecting a 26-pair cable between one of the 26-pair receptacles on the dropline box and the 26-pair receptacle in the SIGNAL & POWER ENTRANCE box (para 2–22). Field wire is then connected to a pair of binding posts on the dropline box (para 2–23).

b. Local or Trunk Circuits on Cable. Local and trunk circuits are established directly, or through a dropline box, to the SB–611/MRC. A 26-pair

cable is connected between SIGNAL 1 receptacle of the AN/MGC-17 and a SIG IN or SIG OUT receptacle of the SB-611/MRC. These circuits appear in the AN/MGC-17 on lines 1 through 12 of the switch-board and lines 13 through 18 of the patching panel.

c. Special Circuits. An intershelter local battery telephone circuit is established on pair No. 26 when a 26-pair cable is connected between SIGNAL 1 receptacle of the AN/MGC-17 and SIG IN or SIG OUT receptacle of the SB-611/MRC. When SIGNAL 1 receptacle is not used, the circuits are established by connecting field wire between the LB PHONE binding posts in the SIGNAL BINDING POSTS box of the AN/MGC-17 and the corresponding pair of binding posts in another shelter. The A and B binding posts in the SIGNAL BINDING POSTS box and on the JACK & BINDING POST panel provide entry into the shelter for two pairs. These binding posts are used to interconnect additional telephone sets or other equipment inside and outside the shelter.

2-22. Cable Connection, 26-Pair

a. Removal of Dust Cover with Locking Ring on Outer End (fig. 2-7).

(1) Grasp the locking ring on the outer end of the dust cover and turn it counterclockwise until the outer end of the dust cover is unlocked.

(2) Continue to turn the dust cover and the receptacle counterclockwise until the upper end is unlocked.

(3) Carefully lift the dust cover from the receptacle.

b. Removal of Dust Cover With Flange on Outer End (fig. 2-8).

(1) Grasp the dust cover and the receptacle and turn them counterclockwise until the upper end is unlocked.

(2) Lift the upper end of the dust cover off the receptacle.

(3) Swing the dust cover upward and outward until the flange unhooks from the lug on the outer end of the receptacle.

c. Connection of 26-Pair Cable (fig. 2-9).

(1) Remove the dust cover from the 16-pair cable connector (*a* or *b* above).

(2) Place the 26-pair cable connector on the receptacle. Be sure the connector is positioned squarely on the receptacle.

(3) Gently press the connector into the receptacle.

CAUTION

The connector or receptacle inserts may be damaged if the connector is not properly positioned or if too much pressure is required to interconnect the units.

(4) Grasp the locking ring on the 26-pair cable connector and turn it clockwise gently until the outer end of the connector is locked to the receptacle.

(5) Continue to turn the connector and the receptacle clockwise until the upper end of the connector is securely locked to the receptacle.

(6) Check to be sure the locks on the outer and upper ends of the receptacle and the connector are securely locked.

d. Disconnecting 26-Pair Connector.

(1) Grasp the locking ring on the 26-pair cable connector, near the cable, and turn it counterclockwise until the lock at each end of the connector is released.

(2) Carefully lift the 26-pair cable connector from the receptacle.

CAUTION

Do not twist the connector to remove it from the receptacle.

(3) Replace the dust covers on the 26-pair cable connector and the receptacle (*e* or *f* below).

CAUTION

Do not drop or lay the open connector on the ground.

e. Replacement of Dust Cover With Locking Ring on Each End.

(1) Place the dust cover squarely on the receptacle.

(2) Hold the dust cover in position. Grasp the locking ring on the outer end of the dust cover and turn the locking ring clockwise until the outer end is locked.

(3) Turn the dust cover and the receptacle clockwise until the upper end is securely locked.

f. Replacement of Dust Covers With Flange on Outer End.

(1) Place the hole in the flange over the lug on the outer end of the receptacle.

(2) Swing the upper end of the dust cover down, squarely onto the receptacle.

Figure 2–7. Removal of dust cover with locking ring on outer end.

(3) Grasp the dust cover and the receptacle and turn both items clockwise until the dust cover is securely locked in position.

2–23. Field Wire Connections

To make field wire connections to the binding posts in the SIGNAL BINDING POSTS box or the dropline box, proceed as follows:

a. SIGNAL BINDING POSTS Box.

(1) Loosen the wing fasteners and lift the cover of the SIGNAL BINDING POSTS box.

(2) For switchboard connections to local circuits, connect field wire to the binding posts (pairs 1–12) as required (para 1–11). Record the connections made.

(3) For teletypewriter line connections to local circuits, connect field wire to the binding posts (pairs 13–18). Record the connections made.

(4) To connect to the telephone set, use the LB PHONE binding posts, if the SIGNAL 1 receptacle is not being used.

(5) When the A or B binding posts in the SIGNAL BINDING POSTS box (fig. 1–11) are used, connect field wire between the binding posts of the telephone set or other equipment and the A and B binding posts on the JACK & BINDING POST panel.

(6) When all connections have been made in the SIGNAL BINDING POSTS box, pull out the

Figure 2-8. Removal of dust cover with flange on outer end.

cover flaps, lower the cover, and fasten the flaps. A slot in each flap engages a stud on the side of the box.

b. Dropline Box.

(1) Loosen the snapslide fastener and lift the cover.

(2) Connect field wire through the side slots to the binding posts as required.

(3) Close and fasten cover.

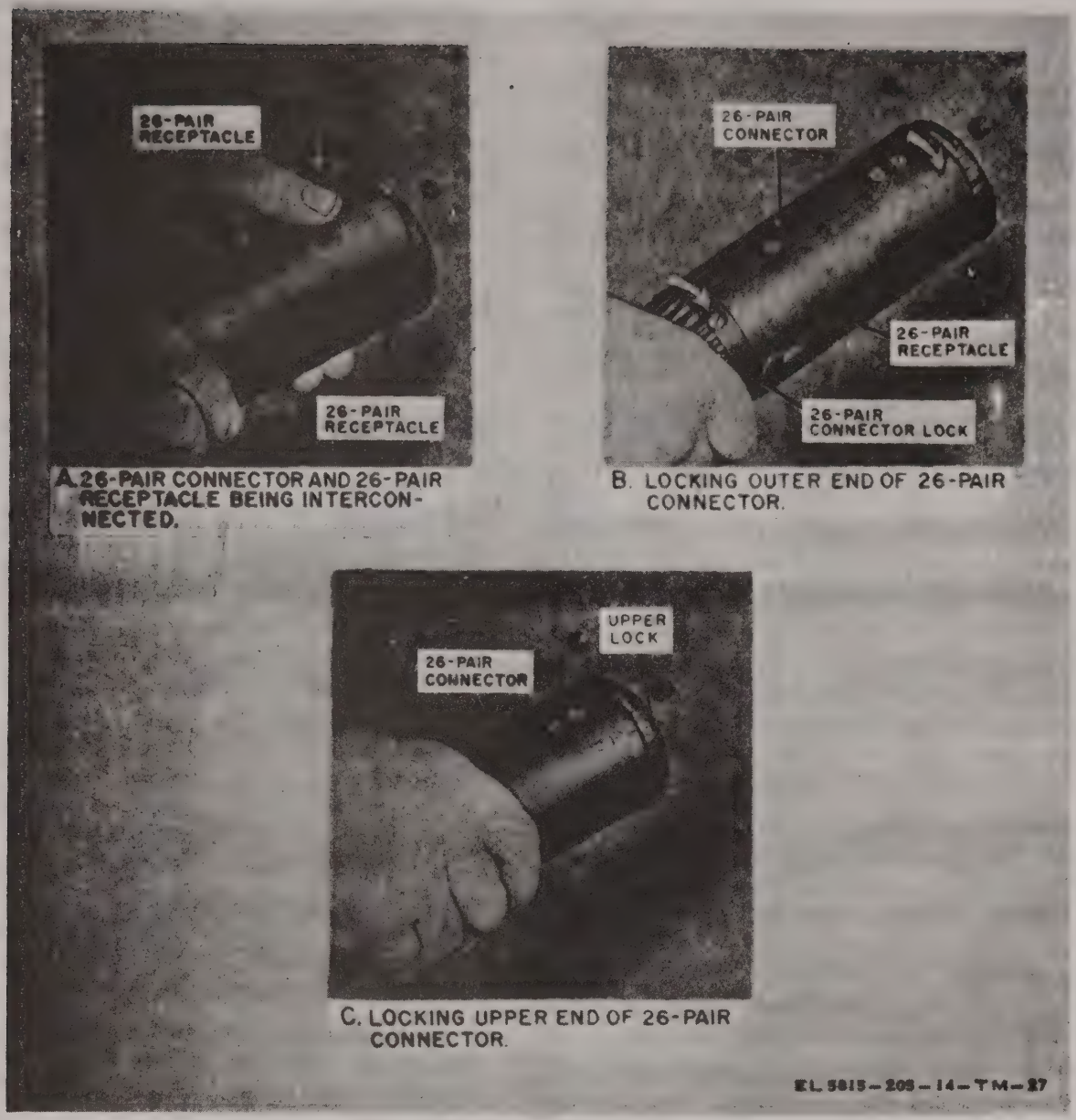


Figure 2–9. Connection of 26-pair cable connector.

Section IV. OPERATION

2–24. Types of Operation

The teletypewriter equipments and associated vf equipment may be arranged in various operating combinations by patched connections at the patching panel. They may be connected to local circuits or to an SB–611/MRC. Telephone Set TA–312/PT provides communication between the AN/MGC–17 and the SB–611/MRC. The operating procedures for all organizational equipment are described in the appropriate manual (appx A).

2–25. Operating Procedures

a. Determine the facilities required and make the necessary connections.

b. Operate the TH–5/TG switches, located on the front wall (fig. 1–6), to ON as required.

c. Operate the switches on each TH–5/TG or TH–22/TG for the desired type of operation as indicated in the chart below:

Type of operation	NORM-REC-SEND switch position	4W-2W-TEL switch position
Half-duplex (two-wire)	NORM	2W
Half-duplex (four-wire)	NORM	4W
*Full-duplex	NORM	4W

*Not applicable when the AN/MGC-17 is arranged for secure operation.

d. Operate the switches on the line unit on each TH-5/TG (not used with TH-22/TG) as indicated in the chart below:

Type of operation	4W FULL DUPLEX-NORMAL switch position	2W SPEECH PLUS 4W-NORMAL 2W-4W switch position
Half-duplex (two wire).	NORMAL	NORMAL 2W
Half-duplex (four-wire).	NORMAL	4W
*Full-duplex	4W FULL DUPLEX	4W

*Not applicable when the AN/MGC-17 is arranged for secure operation.

e. Operate the TA-182/U switches, located on the front wall (fig. 1-8) to ON as required.

f. Operate the switch on each TA-182/U or CV-425/U for the desired type of operation as indicated in the chart below:

Type of operation	TP-TG switch position	2W-4W switch position
Half-duplex (two-wire)	TG	2W
Half-duplex (four-wire)	TG	4W
*Full-duplex	TG	4W

*Not applicable when the AN/MGC-17 is arranged for secure operation.

g. Perform the preliminary starting procedures for the organizational equipment as described in the applicable technical manual.

h. Make the appropriate patched connections (para 2-26, 2-27) for the desired type of teletypewriter operation.

i. When the TT-523A/GGC is installed on the TT-76(*)/GGC, operate switches of the TT-523A/GGC and the TT-76(*)/GGC as indicated in TM 11-5815-338-15 for the desired type of operation.

2-26. Nonsecure Teletypewriter Operation, Patching

Various operating combinations, using the TT-4(*)/TG or the TT-76(*)/GGC, can be obtained by making patched connections between jacks on the patching panel (fig. 1-14) and to jacks on the equipment. The TT-4(*)/TG No. 1 is used primarily with the SB-22/PT; when not in use, the TT-4(*)/TG may be used for other types of operation. Subparagraphs *a* through *h* below describe the various patched connections. Determine the facilities required and make the necessary connections.

a. Half-Duplex (two-Wire or Four-Wire) and Full-Duplex Operation, Using TT-4(*)/TG (A, fig. 2-10).

Patching panel jack	Equipment: TH-5/TG or TH-22/TG	Equipment: Jack
TT-4 REC	NO. 3	LOOP REC
TT-4 SEND	NO. 3	LOOP SEND

NOTE

TH-5/TG NO. 3 is connected through normal-through jacks to lines 17 and 18.

b. Half-Duplex (Two-Wire or Four-Wire) and Full-Duplex Operation, Using TT-76(*)/GGC (B, fig. 2-10). TT-76(*)/GGC No. 1 or TT-76(*)/GGC No. 2 may be used.

Patching panel jack	Equipment: TH-5/TG or TH-22/TG	Equipment: Jack
TT-76 NO. 1 SEND.	NO. 1	LOOP SEND
TT-76 NO. 1 TD.	NO. 1	LOOP SEND
TT-76 NO. 1 REC.	NO. 1	LOOP REC

NOTE

TH-5/TG NO. 1 is connected through normal-through jacks to lines 13 and 14, and TH-5/TG No. 2 is connected through normal-through jacks to lines 15 and 16.

c. Half-Duplex (Two-Wire or Four-Wire) and Full-Duplex Operation, Using TT-4(*)/TG and TT-76(*)/GGC (C, fig. 2-10).

(1) *TT-4(*)/TG.*

Patching panel jack	Equipment: TH-5/TG or TH-22/TG	Equipment: Jack
TT-4 REC	NO. 3	LOOP REC
TT-4 SEND	NO. 3	LOOP SEND

NOTE

TH-5/TG NO. 3 is connected through normal-through jacks to lines 17 and 18.

(2) *TT-76(*)/GGC.* TT-76(*)/GGC No. 1 or TT-76(*)/GGC No. 2 may be used.

Patching panel: From jack	Patching panel: To jack
TT-4 SEND	TT-76 TD
TT-4 REC SERIES	TT-76 REC

d. Half-Duplex (Two-Wire) Operation, Using TT-4(*)/TG, TH-5/TG, and TA-182/U (D, fig. 2-10).

(1) *TT-4(*)/TG.*

Patching panel jack	Equipment TH-4/TG or TH-22/TG	Jack
TT-4 REC	NO. 3	LOOP REC
TT-4 SEND	NO. 3	LOOP SEND

(2) *TA-182/U.*

Patching panel From jack	To jack
TA-182 LOOP (1, 2, 3, or 4)	TH-5 LINE 3 4WS 2W
TA-182 LINE (1, 2, 3, or 4)	LINE 17

e. Half-Duplex (Two-Wire) Operation, Using TT-76(*)/GGC, TH-5/TG and TA-182/U (E, fig. 2-10).

(1) *TT-76(*)/GGC.* TT-76(*)/GGC No. 1 or TT-76(*)/GGC No. 2 may be used.

Patching panel jack	Equipment Type No.	Jack
TT-76 NO. 1 REC.	TH-5/TG NO. 1	LOOP REC
TT-76 NO. 1 SEND.	TH-5/TG NO. 1	LOOP SEND
TT-76 NO. 1 TD.	TH-5/TG NO. 1	LOOP SEND

(2) *TA-182/U.*

Patching panel From jack	To jack
TA-182 LOOP (1, 2, 3, or 4)	TH-5LINE 1 4WS 2W
TA-182 LINE (1, 2, 3, or 4)	LINE 13

f. SB-22/PT, Answering Calls (F, fig. 2-10). To answer switchboard calls using the TT-4(*)/TG or a TT-76(*)/GGC and TH-5/TG, proceed as follows:

(1) Make the appropriate connections for the desired type of equipment.

Patching panel jack	Equipment Type No.	Jack
TT-4 REC or TT-76 NO. 1 or NO. 2	TG-5/TG NO. 1, NO. 2, or NO. 3	LOOP REC
	TH-5/TG NO. 1, NO. 2, or NO. 3	LOOP REC
TT-4 SEND or TT-76 NO. 1 or NO. 2	TH-5/TG NO. 1, NO. 2, or NO. 3	LOOP SEND
	TH-5/TG NO. 1, NO. 2, or NO. 3	LOOP SEND

(2) On the patching panel, patch from the TH-5 LINE (1, 2, or 3) 4WS 2W jack to the SB-22 OPR TH-5 jack.

(3) Connect the plug from line pack 17 on the switchboard into the calling party's jack. Answer with the TT-4(*)/TG or TT-76(*)/GGC and determine the destination of the call.

(4) If the calling party wishes to be switched to another line on the switchboard, remove the line 17 plug from the calling line, insert it in the jack of the line to be called, and ring with the TH-5/TG. The drop of line 17 will operate and the alarm will sound.

(5) Insert the plug from the line pack of the called line into the jack on the calling line. Check the transmission.

(6) Remove the operator's plug from the called line and insert it in the jack of line 17. This will restore the drop and the alarm will stop.

g. Tape Perforation on TT-76(*)/GGC from TT-4(*)/TG Keyboard (G, fig. 2-10).

(1) Operate the selector switch on the TT-76(*)/GGC to 3 LOCAL REPUNCH.

(2) On the patching panel, patch from the TT-4 SEND jack to the TT-76 (No. 1 or No. 2) LOCAL jack.

h. Page Printing on TT-4(*)/TG from TT-76(*)/GGC Transmitter-Distributor (H, fig. 2-10).

(1) Operate the selector switch on the TT-76(*)/GGC to 3 LOCAL REPUNCH.

(2) On the patching panel, patch from the TT-4 REC jack to the TT-76 (NO. 1 or NO. 2) LOCAL jack.

i. Series Jacks, Dc Operation (fig. 6-1). Use the series jacks in the patching panel to reverse the polarity in the dc source or to connect equipment in series as follows:

(1) Insert the plug from the equipment supplying the battery for the loop into SERIES REV NO. 1 jack. SERIES NO. 2 jack reverses the polarity on SERIES NO. 3 jack and provides the same polarity on SERIES REV NO. 1 jack.

NOTE

SERIES NO. 3 jack may be used in place of SERIES NO. 2 jack. SERIES NO. 3 jack reverses the polarity on SERIES NO. 2 jack and provides the same polarity on SERIES REV NO. 1 jack.

(2) Insert the plug from the equipment supplying the battery for the dc loop into SERIES REV NO. 1 jack. Equipments connected to SERIES NO. 2 and SERIES NO. 3 jacks will have the same polarity.

2-27. Secure Teletypewriter Operation, Patching

When the AN/MGC-17 is arranged for secure operation, patched connections are not required

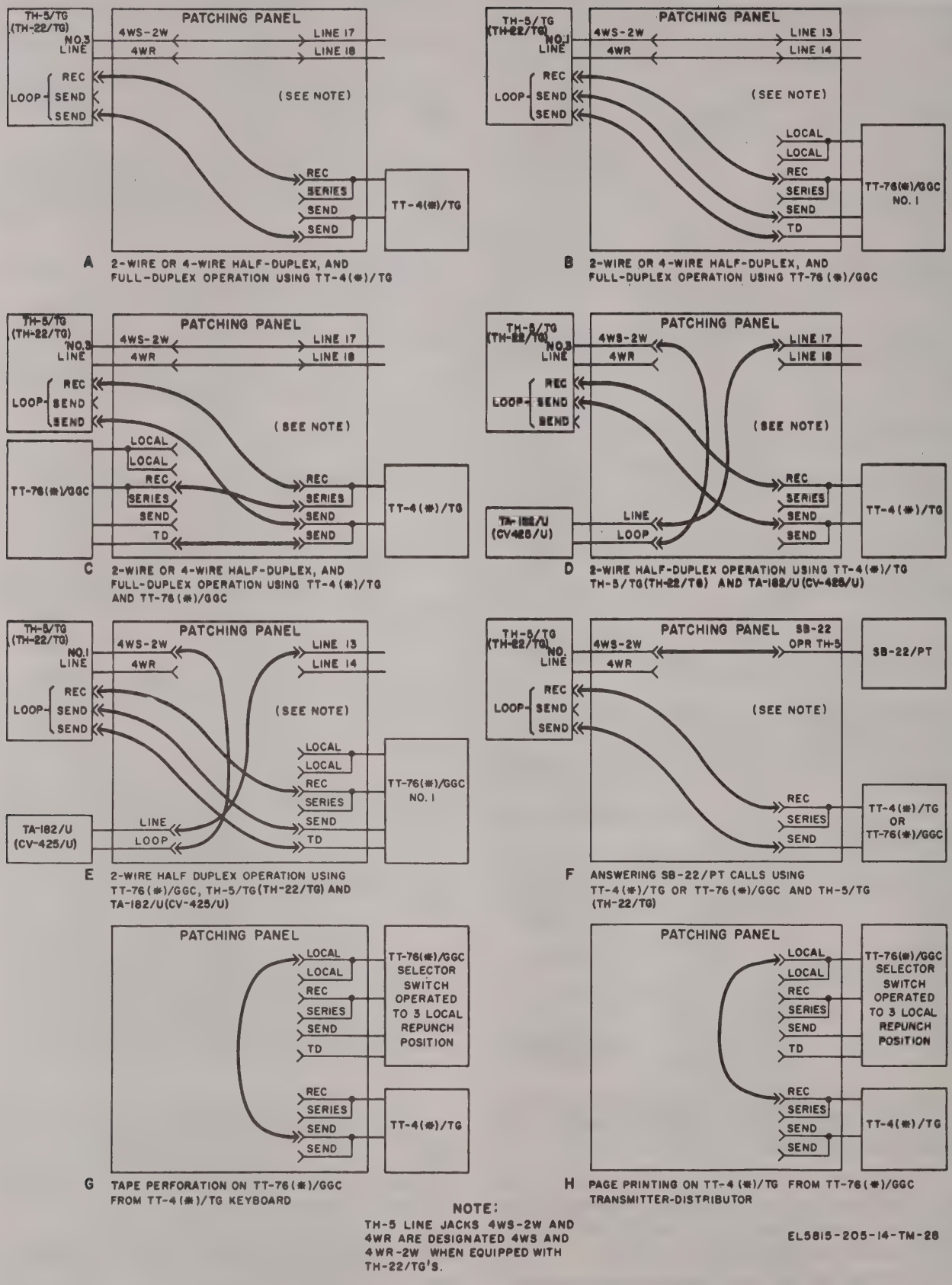


Figure 2-10. Patching for nonsecure teletypewriter operation.

between the teletypewriter equipments, communication security equipments, and the jacks on the patching panel. In the secure mode of operation, the equipments are connected as shown in figure 2–2.

2–28. Power Transfer

After one of the power units has been in operation for 4 hours or if the power unit begins to make unusual noises, follow the procedures given below:

a. Start the standby power unit.

b. When the standby power unit is running properly, operate the POWER SUPPLY switch on the switchbox to the standby power unit (No. 1 to No. 2 or No. 2 to No. 1).

c. Stop the power unit and perform the service procedures.

2–29. Stopping Procedures

a. Emergency. To turn the power off in an emergency, operate the MAIN circuit breaker to OFF.

b. Normal.

(1) Operate the following switches and circuit breakers to OFF.

Circuit breaker or switch	*Location*
BLOWER 1 or BLOWER 2.	POWER DISTRIBUTION PANEL (fig. 13).
NEON	Ac power duct (fig. 9).
FLUORESCENTS	Ac power duct.
OFF-HEAT-FAN ONLY	Heater (TM 11–5805–204–15).
OPR POS	POWER DISTRIBUTION PANEL.
HEATER	POWER DISTRIBUTION PANEL.
LIGHTS	POWER DISTRIBUTION PANEL.
OVERLOAD	POWER DISTRIBUTION PANEL.
MAIN	POWER DISTRIBUTION PANEL.

(2) Stop the power units in the generator set.

2–30. Operation Under Unusual Conditions

The AN/MGC–17 is designed to meet conditions of extreme cold and hot climates. The shelter offers complete protection from the elements to personnel and equipment; however, if the SIGNAL & POWER ENTRANCE box and the SIGNAL BINDING POST box of the shelter and the power terminals of the generator set are exposed to adverse conditions, the following precautions are necessary.

a. Cold Climates. Extreme cold causes cables and wires to become hard, brittle, and difficult to handle. Be careful when handling the cables and connecting them to equipment so kinks and unnecessary loops will not result in permanent damage. Insure that binding posts, receptacles, and connectors are free of frost, snow, and ice by replacing the covers over the connectors and receptacles and closing the cover over the SIGNAL & POWER ENTRANCE and the SIGNAL BINDING POST boxes when they are not in use. Replace the connector or receptacle cover as soon as it is disconnected from the equipment; never drag or place an open connector or receptacle in the snow. Teletypewriter equipment will not function effectively if temperature is below 80° F. Energize the ac circuits (para 2–20) turn the HEATER switch to ON, and heat the shelter sufficiently before operating the equipment.

WARNING

Be sure that the shelter is always properly ventilated.

b. Hot Climates. In hot, dry climates, the connectors, receptacles, and binding posts are subject to damage from dirt and dust. Cover the SIGNAL & POWER ENTRANCE and the SIGNAL BINDING POST boxes when they are not in use and replace the covers over the connectors and receptacles. Never drag or place an open connector or receptacle on the ground.

c. Warm Damp Climates. In warm, damp climates, the equipment is subject to damage from moisture and fungus. Wipe all moisture and fungus from the exterior of the equipment with a lint-free cloth. Follow the recommendations given in *b*.

CHAPTER 3
OPERATOR AND ORGANIZATIONAL MAINTENANCE

NOTE

Refer to TM 750-244-2 for proper procedures for destruction of this equiment to prevent enemy use.

3-1. Scope of Maintenance and Procedures

a. General.

(1) Operator maintenance consists of preventive maintenance. Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to maintain the equipment in combat-serviceable condition. Operator preventive maintenance is performed daily; specific procedures are provided in paragraph 3-2.

(2) Organizational maintenance consists of preventive maintenance, troubleshooting (para 3-5 through 3-10) and replacement of authorized repair parts (TM 11-5815-205-25P). Organizational preventive maintenance is performed monthly and quarterly; specific procedures are provided in paragraphs 3-3 and 3-4.

(3) The preventive maintenance checks and services provided in paragraph 3-2, 3-3, and 3-4 outline inspections to be made at specific intervals. They are designed to help maintain equipment in combat-serviceable condition. They indicate what items should be checked and how they should be checked. Also included are procedures for authorized repairs and references to text, illustrations, and other manuals that contain supplementary information.

(4) Defects that cannot be corrected must be reported to higher category maintenance personnel. Records and reports of repair and preventive maintenance must be made in accordance with procedures given in TM 38-750.

b. Cleaning.

WARNING

The fumes of TRICHLOROETHANE are toxic. Provide thorough ventilation whenever it is used, avoid prolonged or repeated breathing of vapor. Do not use near an open flame or hot surface; trichloroethane is nonflammable but heat converts the fumes to a highly toxic phosgene gas the inhalation of which could result in serious injury or death. Prolonged or repeated skin contact with trichloroethane can cause skin inflammation. When necessary, use gloves, sleeves and aprons which the solvent cannot penetrate.

(1) Use a dry, clean, lint-free cloth or brush to remove dust and dirt. If necessary, moisten the cloth or brush with trichloroethane. After cleaning, wipe dry with a cloth.

WARNING

Compressed air is dangerous and can cause serious bodily harm. It can also cause mechanical damage to the equipment. Do not use compressed air to dry parts where trichloroethane has been used.

(2) Dry compressed air, not to exceed 60 pounds per square inch, may be used to remove dirt and dust from inaccessible places.

c. Touchup Painting. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of the proper paint on bare metal to protect it from further corrosion. Refer to applicable cleaning and refinishing practices specified in TB 746-10.

3-2. Daily Preventive Maintenance Checks and Services

Sequence No.	*Item to be inspected*	*Procedures*	*Reference*
		EXTERIOR	
1	Shelter skin	Check for skin punctures, cracks, or open seams that could permit moisture to enter shelter wall.	Fig. 2-5.
2	Grounding system	*a.* Check grounding system to see that it is properly installed.	*a.* Para 2-18.
		b. Tighten loose ground lead connections	*b.* None.
3	Sling assembly	Tighten turnbuckles to remove slack in sling assembly.	Fig. 2-6; para 2-16.
4	Power and signal entrance boxes, dropline box, and junction box.	*a.* Clean area around binding posts and receptacles.	*a.* Para 3-1; fig. 1-5, 1-7, 1-9, and 1-11.
		b. Put covers on unused receptacles to keep out moisture, dirt, and sand, and to protect contacts.	*b.* Para 2-22; fig. 2-7.

Sequence No.	Item to be inspected	Procedures	Reference
5	Power and signal cable assemblies.	*a.* Clean cable insulation and connectors	*a.* Para 3-1.
		b. Tighten loose connections	*b.* None.
		c. Adjust cable grips so that they effectively relieve strain of cable weight.	*c.* Fig. 1-3.
		d. Put covers on unused cable connectors to keep out moisture, dirt, and sand, and to protect contacts.	*d.* None.
6	Trailer (part of PU-322(G)	*a.* Clean trailer floor and around generator sets.	*a.* Para 3-1; fig. 1-1.
		b. Perform required lubrication and preventive maintenance.	*b.* None.
7	Generator sets (part of PU-322/G).	*a.* Clean generator sets	*a.* Para 3-1.
		b. Tighten loose connections of power cables, grounding leads and, if used, auxiliary fuel lines.	*b.* None.
		c. Perform required lubrication and preventive maintenance.	*c.* None.
8	Switchbox	*a.* Clean the case and web strap	*a.* Fig 1-6; para 3-1.
		b. Tighten loose connections of power cables and ground lead.	*b.* None.
		c. Put covers on unused cable receptacles to keep out moisture, dirt, sand, and to protect contacts.	*c.* None.
		INTERIOR	
9	Signal and power cables, cords, wires, and patching cords.	*a.* Tighten loose connections of plugs and connectors.	*a.* Para 1-21.
		b. Check to see that insulation is not cut. Remove kinks and strain.	*b.* None.
10	Lighting system	Replace defective lamps and fluorescent lamp starters; use spares.	Fig. 1-4.
11	Walls, ceiling, and floor	Check for holes, open seams, or signs of leaks or water seepage.	Fig. 1-15 and 1-16.
12	Wastepaper receptacles	Empty and clean receptacles	Para 1-9.
13	Cabinets	Remove articles that are not authorized	Para 1-9.
14	Batteries and flashlights	Replace batteries or lamp if flashlight fails to light.	Fig. 1-9.
15	Dropline box (if stored in shelter).	Perform procedures given in *sequence No. 4*	Fig. 1-7.
16	Switchbox (if stored inside shelter).	Perform procedures given in *sequence No. 8.*	Fig. 1-6.
17	Clock	Wind and set to correct time, if necessary.	Fig. 1-6.
18	Power distribution panel	Check to see that voltmeter indicates approximately 115 volts ac; that ammeter indication is normal for amount of lighting and equipment in use; replace neon lamps that fail to light when associated switch is operated (use spare).	Fig. 1-13.
19	Communication equipment:		
	a. SB-212/PT	*a.* Perform the required daily preventive maintenance checks and services.	*a.* TM 11-5805-262-12.
	b. Communication security equipment.	*b.* Perform the required daily preventive maintenance checks and services.	*b.* KAM-143/TSEC KAO-83/TSEC.
	c. TT-4A/TG	*c.* Perform the required daily preventive maintenance checks and services.	*c.* TM 11-5815-206-12.

Sequence No.	Item to be inspected	Procedures	Reference
	d. TT-76(*)/GGC	d. Perform the required daily preventive maintenance checks and services.	d. TM 11-5815-238-12.
	e. TH-5/TG or TH-22/TG	e. Perform the required daily preventive maintenance checks and services.	e. TM 11-5805-246-10 or TM 11-5805-356-12.
	f. TA-182/U or CV-425/U	f. Perform the required daily preventive maintenance checks and services.	f. TM 11-5805-247-12 or TM 11-5805-356-12.
	g. TA-312/PT	g. Perform the required daily prevetnive maintenance checks and services.	g. TM 11-5805-201-12.
	h. Patching panel	h. Check to see that: (1) Circuits are patched as required (2) Patching cord plugs are fully inserted into jacks.	h. Fig. 1-7 and 1-15. (1) Para 2-26, 2-27. (2) None.
	i. TT-523A/GGC	i. Perform maintenance, as required	i. TM 11-5815-338-15.
20	Equipment operation	a. Check to see that all equipment performs satisfactorily, especially communication equipment.	a. Para 2-20 and 2-25 through 2-30.
		b. Report operational failure of any equipment or circuit.	b. TM 38-750.
		c. Replace defective item for which authorized spare parts are provided.	c. App A (for organizational equipment manuals).

3-3. Monthly Preventive Maintenance Checks and Services

Sequence No.	Item to be inspected	Procedures	Reference
		EXTERIOR	
1	Shelter skin and hardware.	Paint blistered, pitted, and flaking areas and bare metal spots (such as steps, signal entrance box covers, skids, towing eyes, etc).	Fig. 2-5; para 3-1.
2	Grounding system	Clean ground lug connections	Para 3-1.
3	Sling assembly	Clean parts and paint bare metal spots	Fig. 2-6; para 3-1.
4	Shelter door	a. Clean; paint bare metal spots	a. Para 3-1.
		b. Tighten loose screws and bolts	b. None.
		c. Lubricate door locks and latches with Grease, Molybdenon Disulfide (GMD); lubricate hinges with Lubricating Oil, General Purpose FED-VV-L800; or Lubricating Oil, Engine MIL-L-2104.	c. None.
		d. Clean air filter	d. Fig. 1-15.
		e. Put gasket adhesive on loose gaskets	e. None.
5	Power and signal entrance boxes, dropline box, and junction box.	a. Remove corrosion from metal of wires connected to binding posts.	a. Fig. 1-5, 1-7, 1-9, and 1-11.
		b. Lubricate piano-type hinges of covers; use oil FEDW-L-800 or MIL-L-2140.	b. None.
		c. Paint bare metal spots	c. Para 3-1.
6	Power and signal cables assemblies.	a. Repair insulation, cuts, and abrasions with electrical insulation tape.	a. Fig. 1-10.
		b. Inspect cable layout and relocate cables as necessary so that they are not endangered by, and are not dangerous to, vehicles and personnel.	b. None.
7	Trailer (part of PU-322/G)	a. Tighten mounting bolts that hold generator sets, bracket assemblies of gasoline cans, and ground rod.	a. Fig. 1-1.
		b. Perform required lubrication and preventive maintenance.	b. None.
8	Generator sets (part of PU-322/G).	Perform required lubrication and preventive maintenance.	None.
9	Switchbox	a. Tighten screws around case; tighten locknuts that hold cable receptacles.	a. Fig. 1-6.
		b. Paint bare metal spots	b. Para 3-1.

Sequence No.	Item to be inspected	Procedures	Reference
		INTERIOR	
10	Signal and power cables, cords, wires, and patching cords.	*a.* Tighten screws and clamps that hold wires to terminals. *b.* Repair insulation, cuts, and abrasions with electrical insulation tape. *c.* Cover unconnected bare wires with electrical insulation tape to prevent damage to equipment and personnel. *d.* Polish metal plugs (such as those on patching cords, telephone cords, etc) with Metal Paste Polish (Federal Stock No. 3930–269–5270).	
11	Signal, power, and lighting system ducts.	*a.* Tighten loose screws, bolts, and clips. *b.* Repair or replace defective switches, switchplates, outlets, receptacles, and jacks.	
12	Lighting system	*a.* Tighten loose screws and nuts that hold lighting fixtures, lights, and parts of power distribution panel. *b.* Repair or replace defective parts in lighting system and on power distribution panel.	
13	Walls, ceiling, and floor	*a.* Clean all parts *b.* Check for skin punctures and cracked seams.	*a.* Para 3–1. *b.* None.
14	Cabinets	Repair or replace broken doors and latches.	
15	Equipment mountings	*a.* Tighten loose bolts, nuts, and screws that hold equipment, racks, frames, shelves, braces, clamps, and mounting hardware. Replace missing bolts, nuts, and screws. *b.* Check to see that equipment mountings such as racks, frames, shelves, braces, and clamps are not so bent, broken, or so out of shape as to endanger equipment or personnel.	
16	Patching panels	Repair or replace defective jacks	Fig. 1–14.
17	Batteries, flashlight, and battery boxes.	*a.* Replace batteries that show signs of swelling, leaking, or corrosion. *b.* Clean battery compartments	*a.* Fig. 1–6 and 1–9. *b.* Para 3–1.
18	Exhaust blowers	*a.* Lubricate at oil points with oil *b.* Clean motor and fan housing	*a.* Fig. 1–8. *b.* Para 3–1.
19	Blackout curtains	*a.* Tighten screws that hold fixture to ceiling. *b.* Repair or replace curtains if torn, ripped, or frayed.	*a.* Fig. 1–9. *b.* None.
20	Electric heater	*a.* Clean inside and outside of case *b.* Repair or replace defective parts	*a.* Para 3–1. *b.* None.
21	Dropline box (if stored in shelter).	Perform procedures given in *sequence No. 5* above.	Fig. 1–7.
22	Switchbox (if stored in shelter).	Perform procedures given in *sequence No. 9* above.	Fig. 1–6.
23	Clock	Replace if correct time cannot be maintained.	Fig. 1–6.
24	Communication Equipment:		
	a. SB–22/PT	*a.* Perform preventive maintenance checks and services.	*a.* TM 11–5805–262–12.
	b. Communication security equipment.	*b.* Perform preventive maintenance checks and services.	*b.* KAM–143–TSEC KAO–83/TSEC.
	c. TT–4A/TG	*c.* Perform preventive maintenance checks and services.	*c.* TM 11–5815–206–12.

Sequence No.	Item to be inspected	Procedures	Reference
	d. TT–76(*)/GGC	*d.* Perform preventive maintenance checks and services.	*d.* TM 11–5815–238–12.
	e. TH–5/TG	*e.* Perform preventive maintenance checks and services.	*e.* TM 11–5805–246–20.
	f. TA–182/U	*f.* Perform preventive maintenance checks and services.	*f.* TM 11–5805–247–20.
	g. TA–312/PT	*g.* Perform preventive maintenance checks and services.	*g.* TM 11–5805–201–12.
	h. TH–22/TG	*h.* Perform preventive maintenance checks and services.	*h.* TM 11–5805–356–12.
	i. CV–425/U	*i.* Perform preventive maintenance checks and services.	*i.* TM 11–5805–356–12.
	j. TT–523A/GGC	*j.* Perform preventive maintenance checks and services.	*j.* TM 11–5815–338–15.
25	Equipment performance	*a.* Check out the operation of all equipment.	*a.* Para 3–7.
		b. Replace and/or repair any defective or inoperable part.	*b.* None.

3–4. Quarterly Preventive Maintenance Checks and Services

Sequence No.	Item to be inspected	Procedures	Reference
		GENERAL	
1	Components:		
	a. Inventory	*a.* Inventory equipment; requisition missing and defective parts.	*a.* Para 1–6.
	b. Location of parts	*b.* Check to see that all components are mounted or stowed in assigned places, except those that are being used (such as power cables, switchbox, dropline box, etc).	*b.* Fig. 1–6 through 1–10, 1–15 and 1–16; para 1–8.
	c. Publications	*c.* Requisition all operator and organizational maintenance manuals and all parts manuals covering AN/MGC–17 and its components, that are not on hand or in usable condition (including all current changed publications).	*c.* DA Pam 310–4.
2	Modification work orders	Check to see whether any MWO's are required for AN/MGC–17 or its components. Check equipment to see if applicable MWO's have been applied and MWO number is stamped as required. Perform modification, or request modification as applicable.	See applicable MWO (DA Pam 310–7) and TM 38–750.
		EXTERIOR	
3	Shelter skin and hardware	*a.* Check for skin punctures, cracks, or open seams that would permit moisture to enter shelter wall.	
		b. Repair or replace defective hardware.	
4	Grounding system	Replace ground rod if ground lead cannot be securely tightened. Replace ground lead if it is cut, corroded, or broken.	
5	Shelter door	Replace defective or missing rubber gaskets or those that do not provide watertight seal. Replace broken door hinges and latches.	
6	Power and signal entrance boxes, dropline box, and junction box.	*a.* Carefully remove sand, dirt, and moisture from among contacts of 26-pair cable receptacles.	*a.* Fig. 1–5, 1–7, 1–9, and 1–11.
		b. Tighten locknuts, screws, and bolts that hold receptacles and binding posts.	*b.* None.

Sequence No.	Item to be inspected	Procedures	Reference
		c. Replace all defective parts (such as binding posts, rubber caps on binding posts, cable receptacles, etc).	c. None.
7	Power and signal cable assemblies.	Replace cable assemblies in which wiring, insulation, or connectors are defective.	Fig. 1–10.
8	Trailer (part of PU–322/G)	Perform required preventive maintenance checks and services.	None.
9	Generator sets (part of PU–322/G).	Perform required preventive maintenance checks and services.	None.
		INTERIOR	
10	Signal and power cables, cords, patching cords.	a. Dress all cables, wires, and cords neatly; use cable and cord clamps provided in shelter or use electrical insulation tape and twine.	a. None.
		b. Repair or replace defective cables, cords, wires, and patching cords.	b. Para 3–8.
11	Walls, ceiling, and floor	Paint blistered, pitted, or flaking areas, and bare metal spots.	Para 3–1.
12	Fire extinguisher	a. Refill if weight of contents is less than 2½ pounds or if seal is broken.	a. Appropriate personnel.
		b. Replace if valve assembly is damaged	b. None.
13	First aid kit	Replace if case is broken or damaged. Replace parts that have been used.	Fig. 1–7.
14	Dropline box (if stored inside shelter).	Perform procedures given in *sequence No. 6.*	Fig. 1–7.
15	Reel Unit RL–31	a. Check to see that reel rotates freely. Repair or replace parts that are bent or broken.	a. TM 11–3985–202–35P.
		b. Paint blistered, pitted, or flaking areas and bare metal spots.	b. Para 3–1.
16	Chair and chair cushion	a. Repair or replace chair if parts are bent or broken or if chair is unsafe for use.	
		b. Repair or replace cushion that is torn, cut, has split seams, or exposed padding.	
17	Axe and sledge hammer	Replace if handle is broken, split, or does not fit head tightly.	Fig. 1–8 and 1–9.
18	Ladder	a. Paint blistered, pitted, or flaking areas, and bare metal spots.	a. Para 3–1.
		b. Repair or replace if steps, frame, or parts are bent, broken, or if it is unsafe for use.	b. None.

3–5. Troubleshooting Procedures

The first step in servicing defective equipment is to sectionalize the fault. Trouble may be located in the interconnecting wire cable or equipment. Most faults outside the shelter can be sectionalized by using the tests listed in paragraphs 2–12 through 2–14. Before troubleshooting, refer to the applicable schematic-wiring diagrams.

3–6. Tools and Test Equipment

Tools and test equipment authorized for use by organizational maintenance personnel for the S–169/MGC–17 are listed in appendix B. Refer to the applicable maintenance allocation chart for tools and test equipment authorized for use with the organizational equipment.

3–7. Equipment Performance Checklist

The equipment performance checklist is used by the operator to check the equipment performance systematically. Corrective measures that cannot be performed by the operator are performed by organizational maintenance personnel as indicated in the checklist. Use figures 6–1 and 6–2 in performing the corrective measures. When using the checklist, start at the beginning and follow each step consecutively to locate the trouble. If trouble is suspected in a particular area, start checking at that point and continue the steps

in sequence. THIS CHECKLIST COVERS ONLY THE AN/MGC-17; when a fault or condition is localized to a major component, refer to the applicable technical manual (app A). Operate the equipment as follows:

Item No.	Item	Action	Normal indications	Corrective measures
1	All switches and circuit breakers.	Operate to OFF.		
2	POWER SWITCH on switchbox (generator set).	Operate to No. 1 or No. 2 as applicable.		
3	Power unit	Start the unit.		
4	MAIN circuit breaker on POWER DISTRIBUTION PANEL.	Operate to ON.		
5	Voltmeter on POWER DISTRIBUTION PANEL.	Use flashlight and read.	Voltmeter indicates 115 volts ±10%.	Reset the MAIN circuit breaker to OFF and then to ON. Check circuit breaker CB8; replace if defective (organizational). Check the connections of the power cable and power stub. Check the position of the switch on switchbox. Change power cable or power stub (second echelon).
6	Ammeter on POWER DISTRIBUTION PANEL.	Use flashlight and read.	Ammeter indicates zero	Check to see that all other circuit breakers on the POWER DISTRIBUTION PANEL are at OFF. Check all circuit breakers; replace if defective (organizational).
7	LIGHTS circuit breaker 1 on POWER DISTRIBUTION PANEL.	Operate to ON. Operate NORMAL-BLACKOUT switch to NORMAL.		If one or more, but not all, of the lights fail to go on, replace the faulty light or starter. If all lamps fail to light, check wiring; check circuit breaker CB1; replace if defective (organizational). Check switches S4, S5, and S6; replace if defective (organizational).
	Caution: Under blackout conditions, this test may be made only if the curtains are closed. After testing, operate the NORMAL-BLACKOUT switch to BLACKOUT.	Operate the NEON and FLUORESCENTS switches to ON.	Ammeter indicates approximately 2 amperes. Neon lamp over LIGHTS circuit breaker lights. NEON and FLUORESCENTS lights go on.	
		Depress door microswitch and operate NORMAL-BLACKOUT switch to BLACKOUT.	Lights remain on	Check microswitch and NORMAL-BLACKOUT switch; replace if defective (organizational).
		Release door microswitch. Operate NORMAL-BLACKOUT switch to NORMAL.	Lights go out	Check microswitch; replace if defective (organizational). Check NORMAL-BLACKOUT switch; replace if defective (organizational).
8	CONVENIENCE RECEPTACLE circuit breaker 5 on POWER DISTRIBUTION PANEL.	Operate to ON	Neon lamp above circuit breaker lights. Ammeter indicates approximately 2 amperes.	Replace neon lamp.
		Check each convenience outlet with the extension lamp.	Extension lamp lights	Check outlet with meter; replace if defective (organizational).

Item No.	Item	Action	Normal indications	Corrective measures
		Operate circuit breaker 5 to OFF.		
9	BLOWER 1 circuit breaker 3 on POWER DISTRIBUTION PANEL.	Operate to ON ..... Caution: Vent of the blower must be open.	Neon lamp lights	Neon lamp does not light but blower operates, replace the neon lamp.
		Operate BLOWER 1 circuit breaker to OFF.	Ammeter indicates approximately 4 amperes.	Reset circuit breaker to OFF and then to ON.
			Blower operates	If ammeter reads steadily above 6 amperes, check blower motor; replace if defective (organizational).
10	BLOWER 2 circuit breaker 4 on POWER DISTRIBUTION PANEL.	Repeat procedures listed for item No. 9.		
11	HEATER circuit breaker 6 on POWER DISTRIBUTION PANEL.	Insert heater power cord plug into its ac duct receptacle. Operate HEATER circuit breaker 6 to ON.	Neon lamp above HEATER circuit breaker 6 lights.	Replace faulty lamp.
		Operate heater switch to HEAT. Operate the OFF-HI-MED-LO switch to desired position.	Heater fan operates and heat is circulated. When room temperature rises to thermostat temperature setting, heat will cut off.	Press reset button on heater. Check for defective switch or heating element; replace defective part (organizational).
		Operate heater switch to OFF.		
		Operate OFF-HI-MED-LO switch to OFF; operate HEATER circuit breaker 6 to OFF.		
12	Organizational equipment.	Operate OPR POS circuit breaker to ON.	Neon lamp above OPR POS circuit breaker 2 lights.	Replace faulty lamp.
		Operate TH–5 No. 1 through TH–5 NO. 3 switches to ON.	Neon lamps TH–5 NO. 1, TH–5 NO. 2, and TH–5 NO. 3 light.	Replace faulty lamp.
		Operate TA–182 NO. 1 through TA–182 NO. 6 switches to ON.	Neon lamps TA–182 NO. 1 through TA–182 NO. 6 light.	Replace faulty lamp.
		Operate the equipments as described in the appropriate technical manuals (appx A).		
13	Organizational equipment.	Perform the stopping procedures as described in the appropriate technical manuals (appx A).		
		Operate TH–5 NO. 1 through TH–5 NO. 3 switches to OFF.		

Item No.	Item	Action	Normal indications	Corrective measures
		Operate TA–182 NO. 1 through TA–182 NO. 6 switches to OFF. Operate OPR POS circuit breaker 2 to OFF.		
14	Shelter	Perform the stopping procedures (para 2–29).		

3–8. Duct Cable Test

When trouble is suspected in the duct cable, disconnect all equipment from each end of the affected pairs. Test each pair for opens, shorts, crosses, and grounds.

3–9. Additional Troubleshooting Data

The following schematic and wiring diagrams are used in troubleshooting, in addition to those in the publications listed in appendix A:

Diagram	Fig. No.
Signal schematic-wiring diagram	6–1
Ac power schematic-wiring diagram	6–2

3–10. Removal and Replacement

Refer to TM 11–5805–204–15 for removal or replacement instructions for all components of Shelter, Electrical, Electrical Equipment S–169/MGC–17. To remove organizational equipment, reverse the installation procedures described in paragraphs 2–3 through 2–9.

3–11. Replacement of Shelter Cables (Wiring Harness)

The signal wiring of the AN/MGC–17 consists of one 26-pair cable between the 26-pair receptacle in the SIGNAL & POWER ENTRANCE box and the binding posts in the SIGNAL BINDING POSTS box, one 14-pair cable between the SIGNAL BINDING POSTS box and the switchboard, and one 14-pair cable between the patching panel and the vf ringers numbered 1, 2, 3, and 4 (fig. 6–1). The two 14-pair cables are contained in the signal duct. Authorized replacement cables ARE NOT identical with those originally furnished in the shelter. Replacement procedures are covered in *a* below; color coding of the *replacement* cables is given in *b* below.

a. Replacement of Interior Cables. The interior cables should *not* be replaced when only one or two pairs have become defective. Use the spare pairs as replacements for the defective pairs.

(1) If the spare pairs have been used previously and the defect can be located, repair the defect by splicing. If an entire cable is accidently cut or damaged beyond repair, or if a cable has been repaired previously and there is not enough slack to permit another repair, replace the cable.

(2) To install a replacement cable, first disconnect the defective cable and remove it from the ducts. Cut the new cable to the proper length (same as cable removed), secure it in the ducts. Connect the new cable; use the color coding given in *b* below.

b. Cable Color Coding. Charts (1) and (2) below compare the color code of each pair of the original cabling to the corresponding pairs in the authorized replacement cable. Refer to figure 6–1 for the terminal points of the replacement cables.

(1) *Color coding, 14-pair cabling, pair numbers 1 through 14.*

Pair No.	Original cable color code		Replacement cable color code	
	Tip	Ring	Tip	Ring
1	White	Yellow	White	Blue
2	White	Orange	White	Orange
3	White	Black	White	Green
4	White	Pink or red	White	Brown
5	White	Light brown	White	Gray (slate)
6	White	Dark brown	Red	Blue
7	White	Silver	Red	Orange
8	White	Dark green	Red	Green

Pair No.	Original cable color code		Replacement cable color code	
	Tip	Ring	Tip	Ring
9	White	Light green	Red	Brown
10	White	Violet	Red	Gray (slate)
11	White	Gray (slate)	Black	Blue
12	White	Light blue	Black	Orange
13	White	Dark blue	Black	Green
14	Black	Silver	Black	Brown

NOTE

In the S–169C/MGC–17 shelter, the *replacement color code* listed in the charts ((1) and (2) will be used as the original cable color code.

(2) *Color coding, 14-pair cabling, pairs 13 through 26.*

Pair No.	Original cable color code		Replacement cable color code	
	Tip	Ring	Tip	Ring
13	White	Dark blue	Black	Green
14	Black	Silver	Black	Brown
15	Black	Gray (slate)	Black	Gray (slate)
16	Black	Light brown	Yellow	Blue
17	Black	Dark brown	Yellow	Orange
18	Black	Yellow	Yellow	Green
19	Black	Light blue	Yellow	Brown
20	Black	Dark blue	Yellow	Gray (slate)
21	Black	Light green	Violet	Blue
22	Black	Dark green	Violet	Orange
23	Black	Orange	Violet	Green
24	Black	Violet	Violet	Brown
25	Black	Red	Violet	Gray (slate)
26	Gray (slate)	Red	White	Red

CHAPTER 4

FUNCTIONING OF EQUIPMENT

4–1. General

Teletypewriter Central Officer AN/MGC–17 provides facilities for three nonsecure half- or full-duplex, or for two secure half-duplex teletypewriter circuits and for switching 12 lines of telegraph. Two of these lines are equipped with vf ringers. Four additional ringers are provided for use as required. All signal and power connections are made on the outside of the shelter. Cables from the switchboard and patching panel are connected to the binding posts, which are in parallel with the 26-pair connector. Wiring, for both signal and ac power, is contained in metal ducts. Ac power in the shelter is controlled at the POWER DISTRIBUTION PANEL. For the operating procedures on blowers, heater, and dropline box, refer to TM 11–5805–204–15.

4–2. Modification of TT–76(*)/GGC Transmitter-Distributor

(fig. 4–1)

The use of communication security equipment in the AN/MGC–17 requires a modification to Teletypewriter Reperforator-Transmitter TT–76(*)/GGC (para 2–5). A schematic-wiring diagram of the modified TT–76(*)/GGC is shown in figure 4–1. The 27K-ohm resistor, connnected in series with the transmitting contacts, performs a wave-shaping function for the teletypewriter input signals to the communication security equipment. The resistor does not affect normal operation of the teletypewriter or security equipments.

4–3. Signal Circuits

(fig. 4–2 and 6–1)

All incoming and outgoing signals are connected at either the SIGNAL & POWER ENTRANCE box or the SIGNAL BINDING POSTS box. From the SIGNAL & POWER ENTRANCE box, the incoming signals are applied through the SIGNAL BINDING POSTS box to the jack field sections of the switchboard and the patching panel.

a. Trunk and Local Circuits. The circuits of the AN/MGC–17 are made up of both trunk and local lines (para 2–21). Trunk lines are usually provided from the patching panel in AN/MGC–17 to the SB–611/MRC. Local circuits are usually connected through the SIGNAL BINDING POSTS box to the switchboard.

b. Battery Supply. The NIGHT ALARM BATTERY box located below the switchboard supplies current for operating the night alarm buzzer and the switchboard panel lamps.

c. Cable and Connector Circuit Assignments. The 26-pair receptacle designated SIGNAL 1 is wired to binding posts 1 through 18 and 26, with pairs 19 through 25 left as spares. The 26-pair receptacle contacts are in two groups; male and female. Each group is divided into A sleeve and B tip section. The contacts on the 26-pair receptacle are interconnected so that 1A male connects to 1A female. All the contacts in section A male connect to the corresponding numbered contacts in A female. The same applies in the B section of the receptacle. One 14-pair cable connects the binding posts to the switchboard. The other 14-pair cable connects the patching panel to vf ringers 1 through 4.

d. Special Circuits. Telephone Set TA–312/PT can be connected through pair 26 of SIGNAL 1 receptacle or through LB PHONE binding posts in the SIGNAL BINDING POSTS box to provide intershelter communication. In the SIGNAL BINDING POSTS box, two additional pairs of binding posts provide entry of two local circuits into the shelter. These pairs of binding posts, designated A and B, together with the SIGNAL 1 pair 26 binding posts, are terminated in the JACK & BINDING POST panel.

4–4. Ac Power

(fig. 6–2)

a. Power Supply. All electrical equipment in the AN/MGC–17 is powered by either of two power units. Power from the generator set is

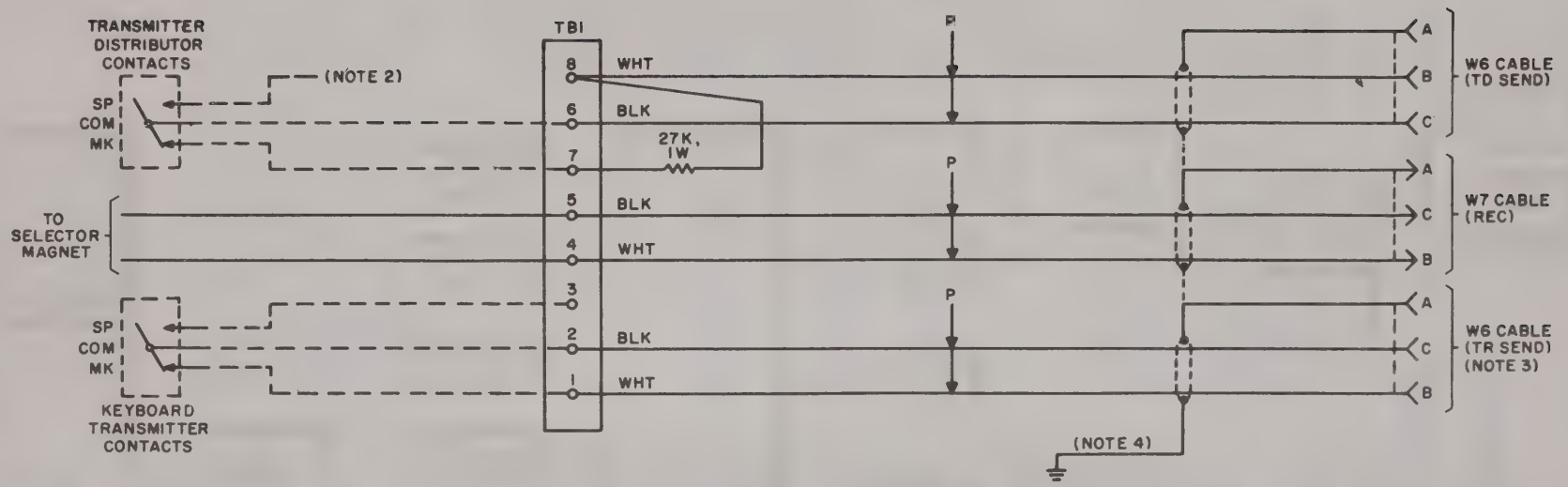
connected into a switchbox. The switchbox has switching facilities to select the output of either power unit. From the switchbox, power is connected to the SIGNAL & POWER ENTRANCE box. Power may also be obtained from a commercial source. For connection to a commercial source, refer to paragraph 2–19.

b. Main Power Circuit. POWER OUT receptacle J7 is wired in parallel with POWER IN receptacle J6 so another shelter may be connected to the same generator if the output (2,500 watts) of the generator is not exceeded. Power is applied through ducts to the POWER DISTRIBUTION PANEL. In the POWER DISTRIBUTION PANEL, current flows through double-pole MAIN circuit breaker CB8 to ammeter M1 and to voltmeter M2. Power is distributed to the different circuits through circuit breakers. Each circuit has an indicating lamp connected in parallel with the circuit breaker. The power input to the shelter is not sufficient to enable all equipment to operate simultaneously. Therefore, to protect the power unit, 12.3-ampere OVERLOAD circuit breaker CB7 is provided on the POWER DISTRIBUTION PANEL. OVERLOAD circuit breaker CB7 cuts off power to the HEATER and CONVENIENCE RECEPTACLE if the circuits become overloaded, thus avoiding any interruption of power to the organizational equipment.

c. Voltmeter and Ammeter. Voltmeter M2, wired across the ac input circuit, indicates the ac voltage applied to the AN/MGC–17. It has a 0–150-volt full-scale deflection with a red line at 115 volts. Ammeter M1 indicates the total alternating current being used in the AN/MGC–17. It has a 0–50-ampere full-scale deflection scale. A current transformer with a ratio of 10 to 1 is used to couple the ammeter to the ac input. Its secondary is connected to the ammeter. Its primary, consisting of 3 turns of wire, is between MAIN circuit breaker CB8 and the individual circuit breakers. With 50 amperes flowing in the line, 5 amperes will flow in the secondary of the transformer and the meter will deflect to full scale.

d. Tributary Power Circuits. Individual circuit breakers CB3 and CB4, which are also used for ON-OFF switches, are provided for each blower. Two duplex convenience receptacles connected in parallel, one in the SIGNAL & POWER ENTRANCE box and the other inside the shelter, are protected from overload by circuit breaker CB5. A separate circuit breaker, CB6, is provided for the heater because of the amount of current it draws. The heater is not required when the organizational equipment is operating.

e. Lamp and Equipment Circuits. NORMAL-BLACKOUT switch S5, wired in parallel with door microswitch S4, controls the flow of current to the light and fluorescent lamps. NEON lamp DS13 has its own ON-OFF switch, S7. With the NORMAL-BLACKOUT switch at BLACKOUT, current flows through switch S4. When the door is opened, switch S4 opens and current cannot flow to the lamps. When the NORMAL-BLACKOUT switch is at NORMAL, current flows through this switch and bypasses switch S4. Each fluorescent fixture is equipped with starter, ballast lamp, tube, and radio-interference filter.



NOTES:

1. TT-76(*)/GGC IS ISSUE "A" OR LATER MODEL.
2. REMOVE THIS LEAD FROM TERMINAL 8 OF TBI AND INSTALL 27K RESISTOR AS SHOWN.
3. THIS CABLE IS NOT USED WITH TT-76(*)/GGC NO.1.
4. SHIELDS OF CABLES W6 AND W7 ARE GROUNDED TO FRAME OF TT-76(*)/GGC.
5. UNUSED PINS "D", "E", AND "F" IN THE CONNECTORS OF CABLES W6 AND W7 ARE NOT SHOWN.

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Figure 4–1. Teletypewriter Reperforator-Transmitter TT–76(*)/GGC modification, schematic-wiring diagram.

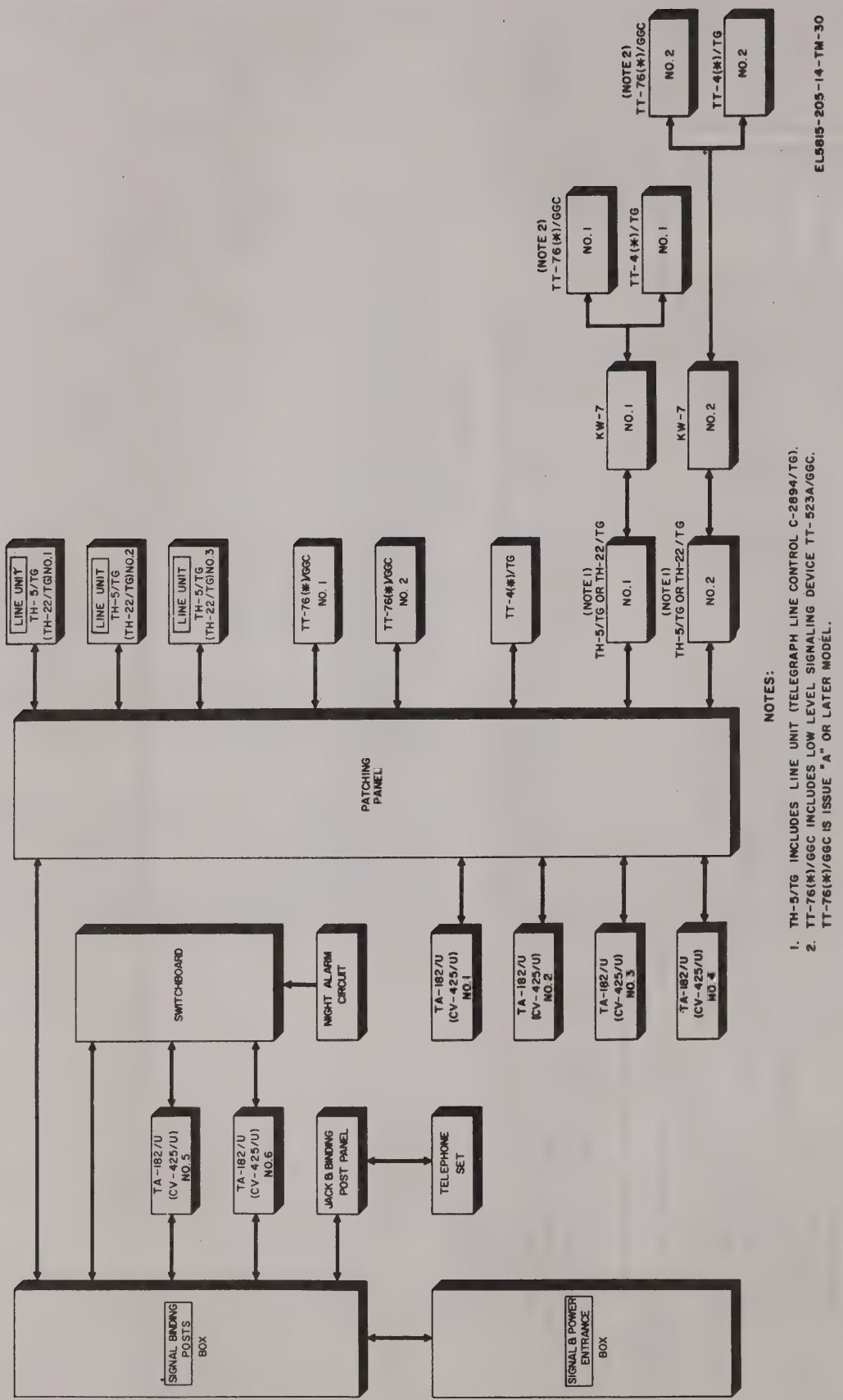

Figure 4-2. AN/MGC-17, signal block diagram for nonsecure operation.

CHAPTER 5

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

5-1. Scope of Maintenance

DS and GS maintenance consists of the repair of mechanical parts, replacement of mechanical parts not available in the organization, and replacement of wiring harness and cable. To determine which items must be repaired or replaced by DS and GS maintenance personnel, refer to appendix B.

5-2. Removal and Replacement

Refer to TM 11-5805-204-15 for removal or replacement instructions for all components of Shelter, Electrical Equipment S-169/MGC-17 not listed below.

a. Organizational Equipment. To remove organizational equipment, reverse the procedures described in paragraphs 2-3 through 2-9.

b. SB-22/PT. If the switchboard is to be removed or replaced, the two extra line packs should be retained if another switchboard is to be installed.

c. TH-5/TG. If a TH-5/TG is to be replaced, it should be restored to its normal condition by reversing the procedure given in paragraph 2-4. The line unit must be retained for use with the new TH-5/TG. The D2-F2 strap must also be replaced.

d. TT-76(*)/GGC. If the TT-76(*)/GGC is to be replaced, it should first be restored to its normal condition by reversing the procedure given in paragraph 2-6. Retain cables W6 and W7 and the 27K-ohm resistor. Retain the TT-523A/GGC and its associated 5.6K-ohm resistor. Retain the patching cord plugged into the TR jack on the TT-76(*)/GGC during nonsecure operation.

e. Telephone Set. If the telephone set is to be removed, be sure to retain Handset-Headset H-144/U and Electrical Cord Assembly CX-4695/U.

f. TT-4(*)/TG. If a TT-4(*)/TG is to be removed or replaced, all cords should be removed and retained for use on the replacement teletypewriter.

5-3. Repair of Shelter Skin

If the exterior skin of the shelter is damaged or punctured, use Patch Kit, Shelter, Electrical Equipment (Federal stock No. 5410-783-6250) to repair holes in the exterior skin of the roof or sides of the shelter. Follow the procedures provided with the kit and those given below, to repair the shelter skin.

a. Preparation of Shelter Skin and Patch.

(1) Check the damaged area to determine if the insulation has been gouged out of the shelter wall. If necessary, fill the hole in the insulation with a clean, noncombustible material. *Do not use the glass cloth.*

(2) Clean the shelter skin around the damaged area within a radius of 3 inches of the hole. Use sandpaper, a knife, or a scraper to remove all paint, dirt, mud, or other foreign material. Do *not* touch the cleaned area with your fingers.

(3) Cut a piece of glass cloth (patch) about 2 inches larger than the hole.

b. Mixing Adherent (Glue). The area to be covered determines the amount of adherent required; the surrounding air temperature indicates whether the cold weather promotor is required and the amount required. Follow the procedures given below to mix the ingredients:

(1) Pour 3 ounces of resin into the mixing cup for each square foot of area to be covered.

(2) Add the curing agent and cold weather promoter to the resin in the amounts shown in the chart below. These amounts are for 3 ounces of resin; increase the curing agent and cold weather promoter in proportion to the amount of resin required.

Temperature (of)	*Curing agent No. 237 (eye dropper filled to red line).*	*Cold weather promoter (eye dropper filled to red line)*
Above 55	1	None
20-55	1	½
Below 20	1	1

(3) Mix the ingredients thoroughly and then apply the mixture to the patch and shelter surface as indicated in *c* below.

c. Application of Mixture and Patch.

(1) Spread a liberal coating of the mixture over the surface of the entire area to be patched. Use the spatula or a brush.

(2) Place the glass cloth patch over the hole; be sure it is centered. Press the patch lightly with the spatula to be sure it is firmly embedded in the mixture.

(3) Spead a second liberal coating of the mixture over the patch. Work from the center of the patch toward the edges. Be sure the patch is completely covered. Check the edges of the patch to be sure they are flat and are firmly embedded in the mixture.

(4) Allow the patch to dry between 4 and 24 hours, depending on the drying conditions.

NOTE

To accelerate low temperature drying, heat the patch with warm, dry air or radiant heat. Do *not* use an open flame.

(5) After the patch is thoroughly dry, smooth the surface with sandpaper and paint it.

d. Cleaning Tools and Storing Components.

(1) Tightly recap the containers and store them in a cool, dry place. The shelf life is seriously affected by heat.

(2) Wait until the mixture is thoroughly dry and then flex the cup and spatula to remove the mixture. Discard the paintbrush. Store the spatula and the cup with the containers.

5–4. Final Testing Procedure

The tests given in this paragraph are designed to measure the performance capabilities of a required equipment. These tests are limited to tests for the equipment and fixtures supplied as part of the S–169/MGC–17. When it is necessary to test the communications equipment, refer to the applicable technical manual for final testing procedures.

a. Wiring and Cable. Check all signal (fig. 6–1) and power (fig. 6–2) wiring for opens, shorts, crosses, and grounds with a multimeter arranged as an ohmmeter. Check the wiring against the wiring diagram to be sure that all leads are properly terminated.

b. Mechanical Tests. Inspect mechanical parts for proper mounting and to be sure that all mounting facilities are securely tightened. If the item performs an operation, such as a door hinge, perform an operational test in addition to an inspection.

CHAPTER 6
SHIPMENT, LIMITED STORAGE, AND TRANSPORTATION

6-1. Disassembly of Equipment

When Teletypewriter Central Office AN/MGC-17 is to be moved to a different location, perform the following operations:

a. Turn off all ac power switches and circuit breakers except the FLUORESCENTS switch, the LIGHTS circuit breaker, and the MAIN circuit breakers.

b. Remove the KW-7/TSEC and applicable keying materials. Turn them over to the accountable officer for secure transit to next location.

c. Fasten the telephone set in its mounting (fig. 1-7).

d. Fasten the wastepaper basket in its holder (fig. 1-8).

e. Secure the heater in its mounting (fig. 1-10).

f. Check to be sure the drain plug in the floor is tightened securely to prevent leakage.

g. Collect the miscellaneous components and place them in a convenient storage location.

h. Secure the chairs (fig. 1-6).

i. Check to see that everything is fastened in position.

j. Disconnect the 26-pair cable in the SIGNAL & POWER ENTRANCE box, and replace the covers on the receptacles and connectors (para 2-22).

k. Wind the 26-pair cables on the cable reel.

l. Install the cable reel in the shelter (fig. 1-10), leaving space for the power cable reel at the rear:

(1) Position the cable reel in the shelter with the center of the hub directly over the mounting plate on the floor.

(2) Remove the cable reel holder from its mounting, engage the stud with the reel hub and mounting plate, and tighten the holder.

m. Operate the FLUORESCENTS switch, the LIGHTS circuit breaker, and the MAIN circuit breaker to OFF.

n. If the power was obtained from the generator set, proceed as follows:

(1) Stop the generator set.

(2) Disconnect the power cable, power stub, and ground lead from the switch box, and replace the covers on the receptacles and connectors.

(3) Secure the switchbox in its mounting (fig. 1-10) in the shelter.

o. If the power was obtained from a commercial source, proceed as follows:

(1) Remove the power from the source terminals.

(2) Disconnect the power stub from the commercial source.

(3) Disconnect the junction box from the power cable and power stub, and replace the cover on the junction box and both cables.

(4) Mount the junction box in its bracket (fig. 1-9).

p. Disconnect the power cable from the POWER IN receptacle in the SIGNAL & POWER ENTRANCE box, and replace the covers on the connector and receptacle.

q. Disconnect the ground leads from the GND lug in the SIGNAL & POWER ENTRANCE box.

r. Close and secure the covers of the SIGNAL & POWER ENTRANCE and SIGNAL BINDING POSTS boxes with the wing fasteners.

s. Disconnect the ground leads from the shelter and generator set ground rods and store in convenient locations in the trailer and shelter.

t. Remove the ground rods from the ground

and install them in their mountings in the shelter (fig. 1–7).

u. Wind the power stubs first and then the power cable on a cable reel.

v. Install the power cable reel next to the 26-pair cable reel (*l*) in the shelter.

w. Place the ladder on top of the cable reels and secure it to the reels with the web straps.

x. Place the two dropline boxes on top of the ladder and secure them to the ladder; use the two web straps provided.

y. Inspect the area around the shelter and trailer for loose items. Be sure that all items are properly stored.

z. Close and secure the blower vents, air filter cover, and message box cover.

aa. Close and lock the door.

6–2. Transportation

The shelter can be transported to another site either by truck or by helicopter. To load the shelter onto a truck or lift it by helicopter, refer to paragraph 2–16.

APPENDIX A

REFERENCES

The following applicable references are available for the operator and repairmen of Teletypewriter Central Office AN/MGC-17.

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TB 75-240	Maintenance and Repair Procedures for S-141/G-, S-144/G-, S-280/G-, S-318/G Type Shelters.
TM 9-213	Painting Instructions for Field Use.
TM 9-2330-202-14F	Operator, Organizational, and Field Maintenance Instructions, Repair Parts and Special Tools List for Trailer, Cargo: 3/4-Ton, 2-Wheel, M101 (2320-738-9509) and M101A1 (2330-898-6779); Chassis: Trailer: 3/4-Ton, 2-Wheel, M116 2330-542-5987) and M116A1 (2330-898-6780).
TM 11-362	Reel Units RL-31, RL-31-B, RL-31-C, RL-31-D, and RL-31E (Including Organizational Repair Parts and Special Tool Lists).
TM 11-5805-201-12	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists: Telephone Set TA-312/PT.
TM 11-5805-201-35	DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tools Lists: Telephone Set TA-312/PT.
TM 11-5805-201-35P	Field and Depot Maintenance Repair Parts and Special Tool Lists: Telephone Set TA-312/PT.
TM 11-5805-204-15	Operator, Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tool Lists: Panel, Patching, Communication SB-611/MRC.
TM 11-5805-246-ESC	Equipment Serviceability Criteria for Telegraph TH-5/TG.
TM 11-5805-246-10	Operator's Manual: Terminal, Telegraph TH-5/TG.
TM 11-5805-246-20	Organizational Maintenance Manual: Terminal, Telegraph TH-5/TG.
TM 11-5805-246-20P	Organizational Maintenance Repair Parts and Special Tool Lists: Terminal, Telegraph TH-5/TG and TH-5TG.
TM 11-5805-246-35	DS, GS, and Depot Maintenance Manual: Terminal, Telegraph TH-5/TG.
TM 11-5805-247-12	Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Converter, Telegraph-Telephone Signal TA-182/U.
TM 11-5805-247-35	DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tool Lists: Converter, Telegraph-Telephone Signal TA-182/U.
TM 11-5805-262-12	Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT.
TM 11-5805-262-20P	Organizational Maintenance Repair Parts and Special Tool Lists: Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT.
TM 11-5805-262-35	DS, GS, and Depot Maintenance Manual: Switchboards, Telephone Manual SB-22/PT and SB-22A/PT.

TM 11-5805-262-35P	DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Telephone Manual SB-22/PT and SB-22A/PT.
TM 11-5805-356-12	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists: Terminal, Telegraph-Telephone AN/TCC-29 (Including Terminal, Telegraph TH-22/TG, and Converter, Telegraph-Telephone Signal CV-425/U).
TM 11-5805-356-34-1	Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools Lists): Terminal, Telegraph TH-22/TG and Filter Assembly, Electrical F-316/U.
TM 11-5805-356-34-2	Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List): Converter, Telegraph-Telephone Signal CV-425/U.
TM 11-5810-221-ESC	Equipment Serviceability Criteria for Communications Security Equipment TSEC/KW-7.
TM 11-5810-221-12P	Operator's and Organizational Maintenance Repair Parts and Special Tool Lists Including Maintenance Allocation Chart: Communications Security Equipment TSEC/KW-7.
TM 11-5810-221-35P	DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Communications Security Equipment TSEC/KW-7.
TM 11-5815-205-ESC	Equipment Serviceability Criteria for Teletypewriter, Central Office AN/MRC-17.
TM 11-5815-205-25P	Organizational, DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Teletypewriter Central Office AN/MGC-17.
TM 11-5815-206-ESC	Equipment Serviceability Criteria: Teletypewriter Set AN/PGC-1 and Teletypewriters TT-4A/TG, TT-4B/TG, TT-4C/TG, and TT-335/TG.
TM 11-5815-206-12	Organizational Maintenance Manual: Teletypewriter Set AN/PGC-1 and Teletypewriters TT-4A/TG, TT-4B/TG, TT-4C/TG, TT-335/TG, and TT-537/G.
TM 11-5815-206-20P	Organizational Maintenance Repair Parts and Special Tool Lists: Teletypewriter Set AN/PGC-1 and Teletypewriters TT-4A/TG, TT-4B/TG, TT-4C/TG, and TT-335/TG.
TM 11-5815-206-35	DS, GS, and Depot Maintenance Manual: Teletypewriter Set AN/PGC-1 and Teletypewriters TT-4A/TG, TT-4B/TG, TT-4C/TG, TT-335/TG, and TT-537/G.
TM 11-5815-206-35P/1	DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Teletypewriter Set AN/PGC-1 Including Teletypewriters TT-4A/TG, TT-4B/TG, TT-4C/TG, and TT-335/TG.
TM 11-5815-238-12	Organizational Maintenance Manual Including Repair Parts and Special Tool Lists: Teletypewriter Sets AN/GGC-3 and AN/GGC-3A and Teletypewriter Reperforator-Transmitters TT-76/GGC, TT-76A/GGC, TT-76B/GGC and TT-76C/GGC.
TM 11-5815-238-35	DS, GS, and Depot Maintenance Manual: Teletypewriter Sets AN/GGC-3 and AN/GGC-3A and Teletypewriter Reperforator-Transmitters TT-76/GGC, TT-76A/GGC, TT-76B/GGC, and TT-76C/GGC.
TM 11-5815-238-35P	DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Teletypewriter Sets AN/GGC-3 and AN/GGC-3A and Reperforator-Transmitters, Teletypewriter TT-76/GGC, TT-76A/GGC, TT-76B/GGC, and TT-76C/GGC.
TM 11-5815-338-15	Operator, Organizational, DS, GS, and Depot Maintenance Including Repair Parts and Special Tools List: Device, Low Level Signaling TT-523/GGC and TT-523A/GGC.
TM 11-5930-201-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Switch Box SA-331/U.

TM 11-5935-203-15P	Organizational, DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Connectors, Receptacle, Electrical U-186A/G and U-186B/G.
TM 11-5935-212-15P	Orga. izational, DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Connectors, Plug, Electrical U-185/G, U-185A/G, and U-185B/G.
TM 11-5965-206-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists: Headset-Microphone H-91/U, H-19A/U, Handset-Headset H-144/U, H-144A/U, H-144B/U, H-144C/U, and Headset-Microphone H-210/G.
TM 11-5965-224-15P	Operator, Organizational, Field, and Depot Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Handsets H-60/PT and H-165/U.
TM 11-6110-201-15P	Operator, Organizational, DS, GS, and Depot Maintenance Repair Parts and Special Tools List: Distribution Boxes J-1077/U and J-1077A/U.
TM 11-6115-206-20P	Organizational Maintenance Repair Parts and Special Tool Lists: Power Units PE-75-C, -D, -J, -K, -T, -U, -W, -AA, -AB, -AC, -AD, -AE, and -AF.
TM 11-6115-206-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Power Units PE-76-C, -D, -J, -K, -T, -U, -W, -AA, -AB, -AC, -AD, -AE, and -AF.
TM 11-6115-225-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists: Generator Set, Gasoline Engine, Trailer Mounted PU-322/G.
TM 38-750	The Army Maintenance Management Systems (TAMMS).
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX B
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations for AN/MGC-17. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

B-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable

tion under typical field operating conditions. ime includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew
O - Organizational
F - Direct Support
H - General Support
D - Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. Tool and Test Equipment Requirements (sect. III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

B-5. Remarks (sect IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

SECTION II MAINTENANCE ALLOCATION CHART FOR

CENTRAL OFFICE, TELETYPEWRITER AN/MGC-17

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	CENTRAL OFFICE,TELETYPEWRITER AN/MGC-17	Inspect	0.3						
		Test		0.5					
		Service	0.3						
		Repair			1.0			1,3	
		Overhaul					300.0	1,2,3	
		Rebuild					400.0	1,2,3	
01	SHELTER, ELECTRICAL EQUIPMENT S-169( )/MGC-17	Inspect	0.2						
		Service	0.2						
		Repair			0.8			1,3	
		Overhaul					100.0	1,2,3	
		Rebuild					150.0	1,2,3	
		Repair	0.3					2	
		Repair		0.5				1,2	
02	REEL UNIT RL-31	Replace		0.1					A
03	CONVERTER, SIGNAL, TELEGRAPH-TELEPHONE TA-182/U	Replace		0.1					B
04	TELEGRAPH TERMINAL TH-5/TG	Replace		0.1					C
05	TELEPHONE SET TA-312/PT	Replace		0.1					D
06	SWITCHBOARD, TELEPHONE SB-22/PT	Replace		0.1					E
07	TELETYPEWRITER SET TT-4A/TG	Replace		0.1					F
08	TELETYPEWRITER SET TT-76/GGC	Replace		0.1					G
09	GENERATOR SET, GASOLINE ENGINE, TRAILER MOUNTED PU-322/G	Replace		0.1					H
10	CABLE ASSEMBLIES, 26 PAIR	Inspect	0.1						
		Test		0.3				1	
		Service	0.1						
		Replace		0.2					
		Repair			3.0			1,3	
11	CABLE ASSEMBLIES, POWER	Inspect	0.1						
		Test		0.2				1	
		Service	0.1						
		Replace		0.3					
		Repair		0.7				1,3	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR

CENTRAL OFFICE, TELETYPEWRITER AN/MGC-17

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,F,H,D	MULTIMETER TS-352/U	6625-00-242-5023	
2	O,F	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
3	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-00-605-0079	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	See TM 11-362.
B	See TM 11-5805-247-12.
C	See TM 11-5805-246-20.
D	See TM 11-5805-201-12.
E	See TM 11-5805-262-12.
F	See TM 11-5815-206-12.
G	See TM 11-5815-238-12.
H	See TM 11-6115-225-15P.

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Chief of Staff

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USAARMS (2)
USAIS (2)
USAES (2)
USAINTS (3)
WRAMC (1)
USACDCEC (10)
Instl (2) except
  Ft Gordon (10)
  Ft Huachuca (10)
  WSMR (3)
  Ft Carson (15)
  Ft Richardson (ECOM Ofc) (2)
Army Dep (2) except
  LBAD (14)
  SAAD (30)
  TOAD (14)
  LEAD (7)
  NAAD (5)
  SVAD (5)
  ATAD (10)
Gen Dep (2)
Sig Sec Gen Dep (5)
Sig Dep (10)
SigFLDMS (2)
ATS (1)
USAERDAA (2)
USAERDAW (5)
USACRREL (2)
MAAG (1)
USARMIS (1)
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  6–501
  6–502
  6–555
  6–556
  6–615
  6–617
  7
  11–15
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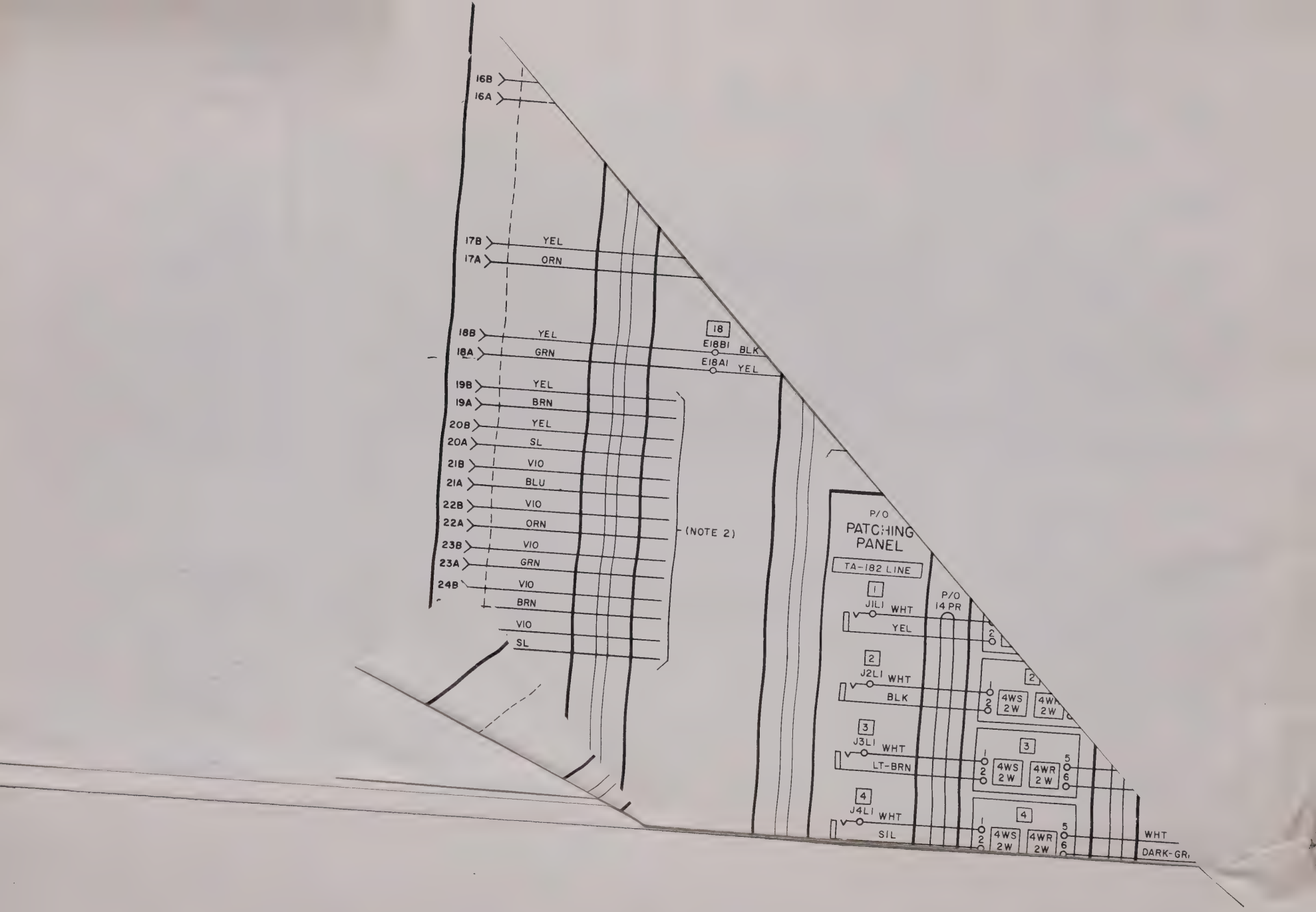
  11–35
  11–38
  11–39
  11–85
  11–86
  11–97
  11–98
  11–215
  11–217
  11–225
  11–227
  11–228
  11–302
  11–500 (AA–AC)
  17
  29–102
  29–134
  29–136
  32–56
  32–57
  32–97
  32–500
  37
  57
  77–100
  77–102

NG: State AG (3).

USAR: None.

For explanation of abbreviations used, see AR 310–50.


16B
16A
17B YEL
17A ORN
18B YEL
18A GRN
19B YEL
19A BRN
20B YEL
20A SL
21B VIO
21A BLU
22B VIO
22A ORN
23B VIO
23A GRN
24B VIO
BRN
VIO
SL
(NOTE 2)
18
E18B1 BLK
E18A1 YEL
P/O
PATCHING
PANEL
TA-182 LINE
P/O
14 PR
1
J1L1 WHT
YEL
2
J2L1 WHT
BLK
3
J3L1 WHT
LT-BRN
4
J4L1 WHT
SIL
4WS
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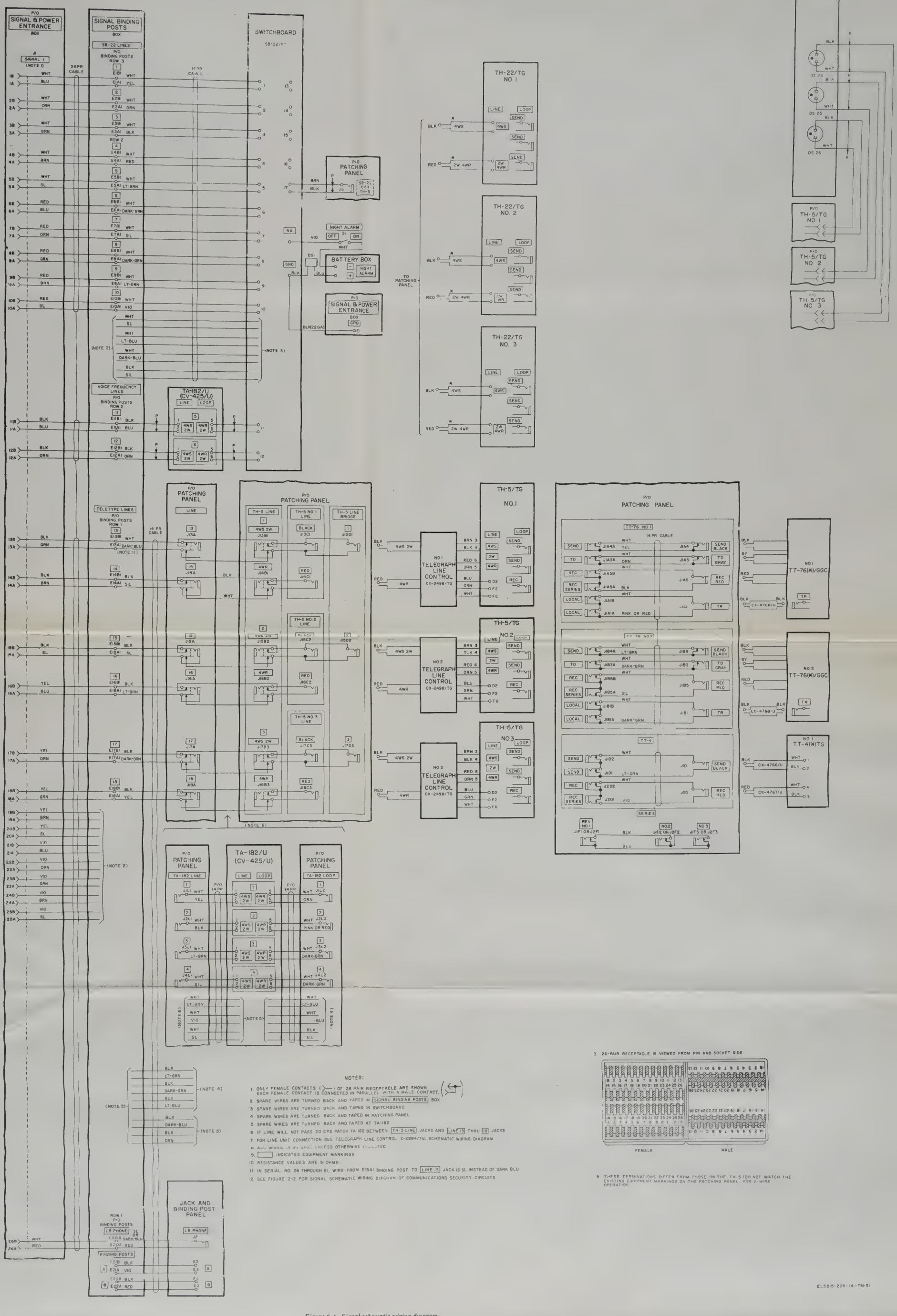
DARK-GR



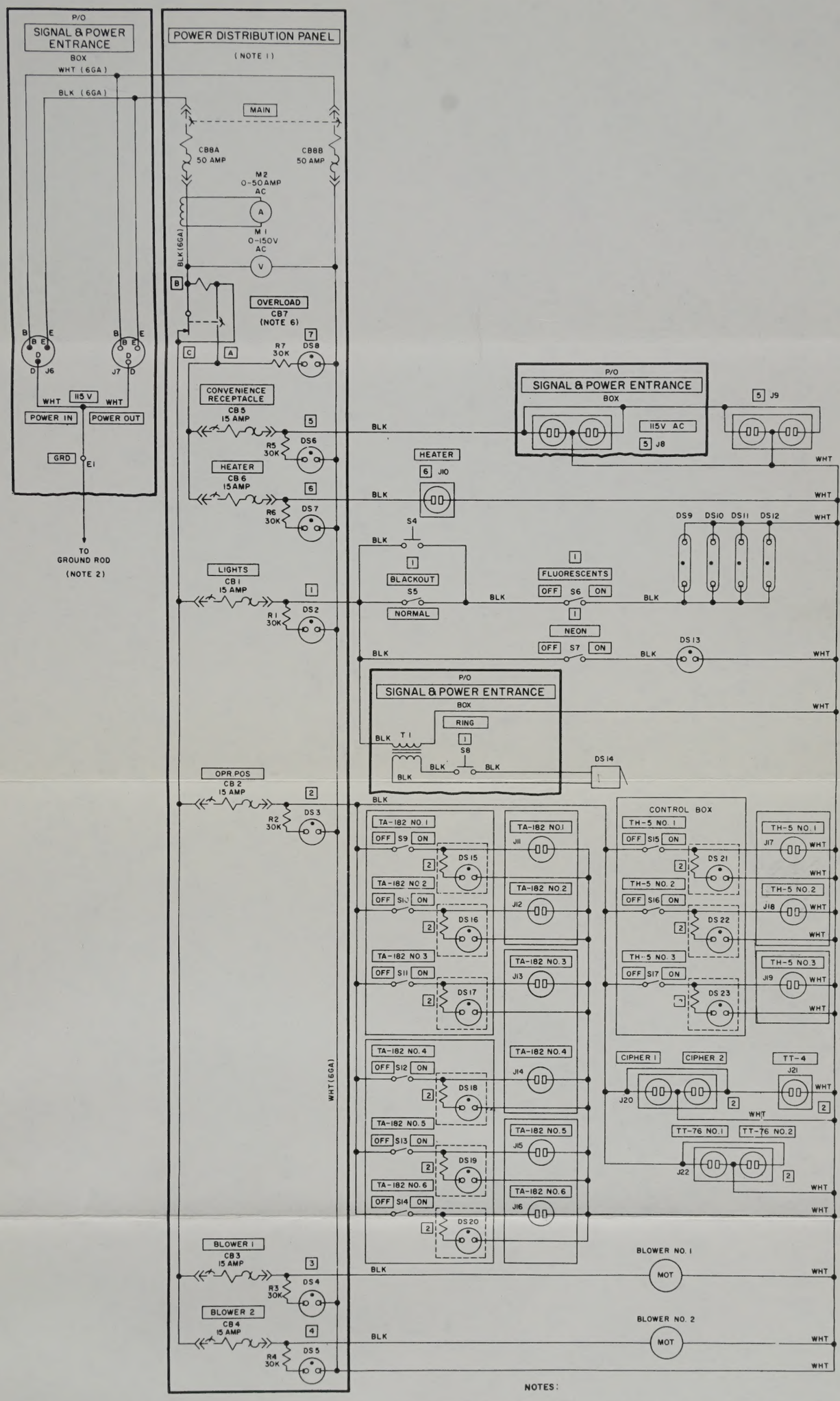
NOTES:

1. ONLY FEMALE CONTACTS ( ) OF 26 PAIR RECEPTACLE ARE SHOWN EACH FEMALE CONTACT IS CONNECTED IN PARALLEL WITH A MALE CONTACT.
2. SPARE WIRES ARE TURNED BACK AND TAPED IN SIGNAL BINDING POSTS BOX
3. SPARE WIRES ARE TURNED BACK AND TAPED IN SWITCHBOARD
4. SPARE WIRES ARE TURNED BACK AND TAPED IN PATCHING PANEL
5. SPARE WIRES ARE TURNED BACK AND TAPED AT TA-182
6. IF LINE WILL NOT PASS 20 CPS PATCH TA-182 BETWEEN TH-5 LINE JACKS AND LINE 13 THRU 18 JACKS
7. FOR LINE UNIT CONNECTION SEE TELEGRAPH LINE CONTROL C-2894/TG, SCHEMATIC WIRING DIAGRAM
8. ALL WIRING IS 24 GAGE UNLESS OTHERWISE INDICATED
9. [ ] INDICATES EQUIPMENT MARKINGS
10. RESISTANCE VALUES ARE IN OHMS
11. IN SERIAL NO. 26 THROUGH 51, WIRE FROM E13A1 BINDING POST TO LINE 13 JACK IS SL INSTEAD OF DARK BLU
12. SEE FIGURE 2-2 FOR SIGNAL SCHEMATIC WIRING DIAGRAM OF COMMUNICATIONS SECURITY CIRCUITS
13. 26-PAIR RECEPTACLE IS VIEWED FROM PIN AND SOCKET SIDE

4. THESE TERMINATIONS DIFFER FROM THOSE ON THE TH-5 TOO NOT MATCH THE EXISTING EQUIPMENT MARKINGS ON THE PATCHING PANEL. FOR 2-WIRE OPERATION

EL5815-205-14-TM-31

Figure 6-1. Signal schematic wiring diagram.



NOTES:

1. WIRING OF [POWER DISTRIBUTION PANEL] IS 16 GAGE EXCEPT AS OTHERWISE INDICATED.
2. 1/4 IN WIDE BRAID LEAD.
3. WIRING 12 GAGE UNLESS OTHERWISE INDICATED.
4. [ ] INDICATES EQUIPMENT MARKING.
5. ALL WIRING FROM CIRCUIT BREAKER TO TA-182/U AND TH-5/TG SWITCHES, LAMPS AND RECEPTACLES IS 16 GAGE.
6. THE VALUE OF OVERLOAD CIRCUIT BREAKER CB7 MAY BE 18.3 AMPS OR 37.5 AMPS DEPENDING ON EQUIPMENT MODELS.

EL5815-205-14-TM-32

Figure 6-2. Ac power schematic-wiring diagram.

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